PB87-175568

NESHAPs (National Emissions Standards for Hazardous Air Pollutants) Asbestos Demolition and Renovation Inspection Workshop Manual

GCA Corp., Bedford, MA

Prepared for

Environmental Protection Agency, Washington, DC

Dec 84

U.S. Department of Commerce
National Technical Information Service
NTIS

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA 340/1-85-008	2.	3. RECIPIENT'S ACCESSION NO. PB87-175568
4. TITLE AND SUBTITLE NESHAPs Asbestos Demolition and Renovation Inspection Workshop Manual		5. REPORT DATE December 1984
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Stephen Piper Marc Grant		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Environmental Protection Agency Stationary Source Compliance Division Washington, DC 20460		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO. 68-02-3961 Task 6 GCA Corporation
12. SPONSORING AGENCY NAME AND ADDRESS		13. TYPE OF REPORT AND PERIOD COVERED Final
		14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

This document was prepared following repromulgation of the asbestos NESHAP standard making work practice enforceable by EPA.

16. ABSTRACT

This document presents the technical content of a workshop designed for training regulatory inspectors involved in enforcement of the asbestos NESHAP regulation, 40 CFR Part 61, Subpart M, dealing with the demolition and renovation of buildings containing asbestos materials. Information presented in this document covers health effects related to inhalation of asbestos, national EPA strategy, demolition and renovation regulations, asbestos in schools program, OSHA requirements, safety equipment recommendations, legal issues of case development, inspection procedures and bulk sampling/analysis.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Asbestos Emissions Demolition Renovation NESHAP Industrial Sources		

18. DISTRIBUTION STATEMENT Unlimited	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 148
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

PB87-175568

EPA-340/1-85-008

Stationary Source Compliance Training Series

NESHAPs Asbestos Demolition And Renovation Inspection

Workshop Manual

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161

December 1984

EPA
US ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR QUALITY PLANNING AND STANDARDS
STATIONARY SOURCE COMPLIANCE DIVISION
WASHINGTON, DC 20460

156P

EPA-340/1-85-008

NESHAPs
Asbestos Demolition and Renovation Inspection Workshop Manual

Final Report

By

Stephen Piper
Marc Grant

GCA Corporation
GCA/Technology Division
Bedford, Massachusetts 01730

Contract No. 68-01-3961

EPA Project Officer: John Busik
EPA Work Assignment Manager: Robert Myers

Stationary Source Compliance Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Washington, DC 20460

December 1984

ia

DISCLAIMER

This Final Report was furnished to the Environmental Protection Agency by the GCA Corporation, GCA/Technology Division, Bedford, Massachusetts 01730, in partial fulfillment of Contract No. 68-02-3961, Assignment No. 6. The opinions, findings, and conclusions expressed are those of the authors and not necessarily those of the Environmental Protection Agency or the cooperating agencies. Mention of company or product names is not to be considered as an endorsement by the Environmental Protection Agency.

PEER REVIEW STATUS

This document has been peer reviewed by the Environmental Protection Agency following its presentation at the April 10-11, 1984 Regional Workshop at New York, NY. Peer reviewers were Peter Flynn, EPA-Region II, Catherine McNair, EPA-Region I, and Tom Elter, EPA-Region I.

CONTENTS

Acknowledgements v

1. Introduction 1
    Purpose of Workshop 1
    Workshop Approach 2
2. Background Information 3
    NESHAPs Program 3
    Description of Mineral 4
    Health Effects 7
    Regulatory History 10
    Asbestos Sources 12
3. National Regulatory Strategy 14
    Objectives 14
    Background 14
    Strategy 15
4. Demolition and Renovation Regulations 20
    Definitions 20
    Applicability of Standard 22
    Notification Requirements 22
    Procedures for Asbestos Emission Control 25
    Air Cleaning Control Devices 28
    Waste Disposal 30
    Future Developments - Possible Revisions 35
5. Asbestos in Schools 37
    Background 37
    Requirements 38
    Abatement Techniques 42
    Future Developments 47
6. OSHA Asbestos Program 51
    Background 51
    Regulatory History 51
    OSHA Asbestos Standard 53
    Future Revisions Concerning the Construction Industry . . 58
7. Safety Equipment 61
    Background 61
    Protective Equipment 61
    Equipment Use 65
    Safety Precautions 66

CONTENTS (continued)

8. Asbestos NESHAP Inspections Legal Perspectives 68
    General 68
    Types of Evidence 71
9. Demolition and Renovation Onsite Investigation 74
    Background 74
    Inspection Equipment Checklist 75
    Pre-Entry Observations and Preparations 77
    Site Entry 77
    Pre-Inspection Interview 78
    Identifying Friable Materials 79
    Demolition and Renovation - Emission Sources 81
    Emission Control Options 81
    Negative Air System 82
    Field Data Collection Checklist 84
    Post Inspection Interview 87
    Site Exit Observations 88
    Inspection of Landfill or Waste Disposal Site 88
    Disposal Site Field Data Collection Checklist 89
10. Asbestos Bulk Sampling 94
    Purpose 94
    Protective Equipment 94
    Sampling Equipment 95
    Site Selection 96
    Collection Methods 97
    Cleanup Procedures 98
    Quality Assurance 98
11. Laboratory Analysis 101
    Introduction 101
    Analysis Methods 101
    QA and Reporting 104
12. Asbestos Inspection Experience 107

Asbestos References 110

Appendices

A. National Emission Standards for Hazardous Air Pollutants Subpart M - Asbestos 113
B. Asbestos Sources - Field Data Collection Checklists 122
C. Asbestos - NESHAPs Applicability Determinations 129

ACKNOWLEDGEMENTS

GCA wishes to thank the EPA peer reviewers, Peter Flynn, Catherine McNair, and Tom Elter, for their comments and corrections on the Preliminary Draft Document. GCA extends special thanks to the following personnel for their contributions to the Regional Workshop, and for comments and assistance during preparation of this Draft Final Report:

Bob Myers, EPA Assignment Manager

Mike Yarnell, OSHA Industrial Health Supervisor

Howard Stecker, EPA Demolition/Renovation Inspector

1. INTRODUCTION

PURPOSE OF WORKSHOP

Promulgation of amendments to the national emission standard for asbestos, which were proposed in the Federal Register on July 13, 1983 (48 FR 32126), occurred on April 5, 1984 (49 FR 13661). The intended effect of the amendments is to reinstate work practice and equipment provisions of the asbestos standard that were held not to be emission standards by the U.S. Supreme Court in 1978. The objective of this workshop is to provide a consistent understanding of the asbestos regulations as they pertain to demolition and renovation projects. The workshop is being sponsored by EPA Regional Agencies in cooperation with state and local air pollution control agencies.

WORKSHOP APPROACH

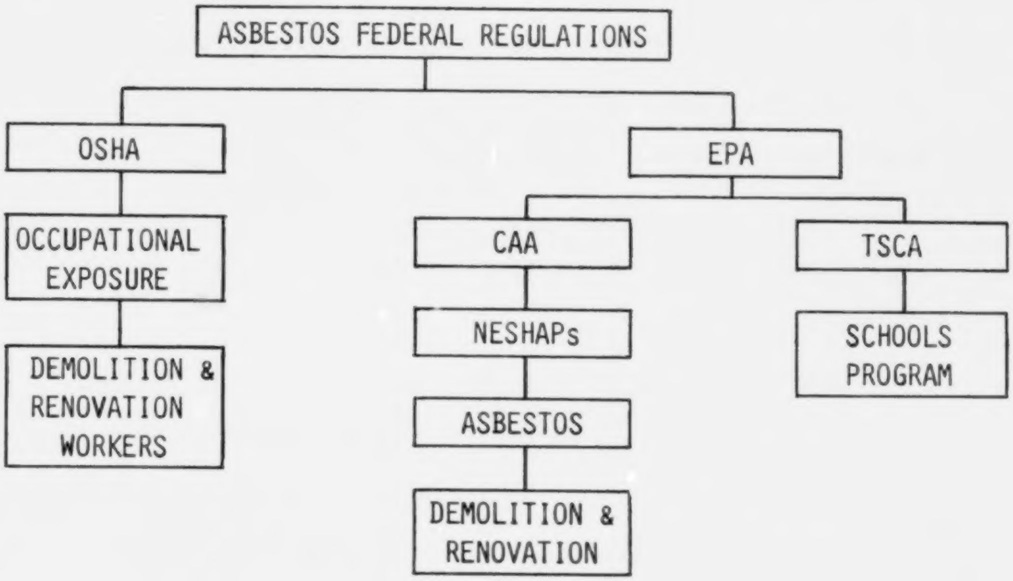
Speakers from GCA and sponsoring EPA agencies will present information pertaining to the following subject areas during the one-day classroom phase of the workshop:

- Background Information - Asbestos
- National Regulatory Strategy
- Demolition and Renovation Regulations
- TSCA Asbestos in Schools Program
- OSHA Asbestos Program
- Safety Equipment
- Asbestos NESHAP Inspections Legal Perspectives
- Demolition and Renovation Inspection Procedures
- Bulk Sampling
- Analysis of Asbestos
- Asbestos Inspection Experience

Onsite inspections of demolition and/or renovation projects will be conducted during the second day of this workshop, if scheduled.

2. BACKGROUND INFORMATION

NESHAPs PROGRAM


ASBESTOS FEDERAL REGULATIONS
OSHA
EPA
OCCUPATIONAL EXPOSURE
DEMOLITION & RENOVATION WORKERS
CAA
TSCA
NESHAPs
SCHOOLS PROGRAM
ASBESTOS
DEMOLITION & RENOVATION

- The EPA regulates asbestos under the National Emissions Standards For Hazardous Air Pollutants (NESHAPs) which is listed as Section 112 of the Clean Air Act (CAA).

- Hazardous pollutant has been defined as "an air pollutant to which no ambient air quality standard is applicable and which in the judgement of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness."

- The NESHAPs program currently regulates Benzene, Beryllium, Mercury, and Vinyl Chloride along with Asbestos.

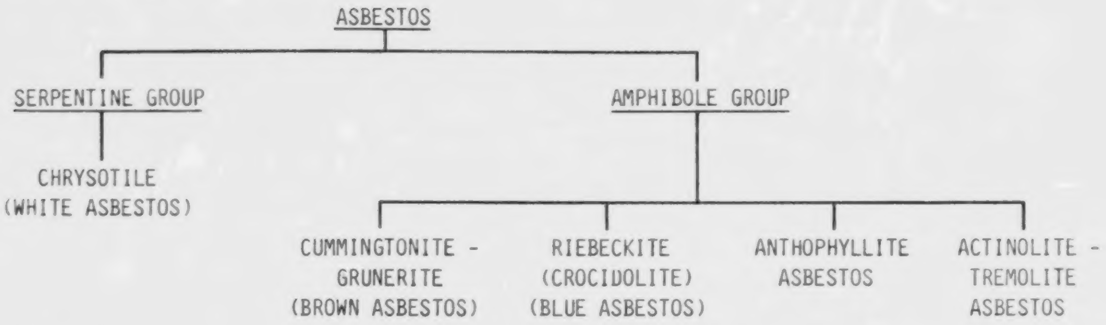
- The purpose of the NESHAPs program is to protect the public from exposure to Asbestos in the ambient air. For the purpose of this workshop, the NESHAPs program is examined as it pertains to demolition and renovation operations.

- Other Federal regulations related to demolition and renovation include:
  - OSHA, which regulates asbestos exposure for all workers, including construction (demolition and renovation) workers.
  - TSCA, which regulates the Asbestos In Schools program requiring notification and identification of asbestos and giving guidelines for abatement.

DESCRIPTION OF MINERAL

Definition of Asbestos

- Asbestos forms as veins in rocks of two mineral groups, serpentine and amphibole.


ASBESTOS
SERPENTINE GROUP
AMPHIBOLE GROUP
CHRYSOTILE (WHITE ASBESTOS)
CUMMINGTONITE - GRUNERITE (BROWN ASBESTOS)
RIEBECKITE (CROCIDOLITE) (BLUE ASBESTOS)
ANTHOPHYLLITE ASBESTOS
ACTINOLITE - TREMOLITE ASBESTOS

- With respect to the NESHAP standard, asbestos refers to the above five commercially viable, naturally formed hydrated silicates.

- The definition of asbestos has been expanded to a more geologically correct form. The categories now identified are the general groups under which the asbestiform or fiberous varieties are listed. For example, amosite is a fiberous form under the cummingtonite-grunerite group.

Asbestos Properties

- Asbestos fibers are noncombustible, resistant to corrosion and degradation, have relatively high tensile strength, are chemically and thermally stable, and have low thermal and electrical conductivities.

- These properties make asbestos fibers desirable for use in the manufacture of many industrial and commercial products. In fact, it has been estimated that asbestos fibers have been used in the manufacture of 2,000 to 3,000 distinct industrial and commercial products.

Asbestos Consumption

- United States consumption data provided by The Bureau of Mines reveals that chrysotile usage accounted for approximately 97 percent of the total asbestos consumed in 1983. This trend still exists today and will likely continue into the near future, because of chrysotile's greater availability and utility compared to the other varieties.

- Over the past several years asbestos consumption in the United States has declined steadily. The decline is most likely due to greater awareness of its serious health effects, increasing regulatory control, and in part, recent declines in the economy.

- Approximately 80 percent of the asbestos consumed in this country is imported from Canada, while the remainder is mined at three United States locations, two in California and one in Vermont.

HEALTH EFFECTS

Asbestos is a known environmental carcinogen and inhalation of asbestos fibers may increase the risk of serious irreversible diseases, which can include:

Lung Cancer--A respiratory malignancy. Studies have shown the risk of lung cancer increases directly with increasing cumulative exposure.

Asbestosis--A noncancerous respiratory disease characterized by scarring of the lung tissue. Asbestosis is a chronic irreversible lung ailment that can produce shortness of breath and lung damage.

Mesothelioma--Rare cancer that involves the thin membrane lining of the chest and abdomen. Mesothelioma has been observed almost exclusively when there has been a history of exposure to asbestos. Also, the earlier one begins inhaling asbestos, the higher the likelihood of developing mesothelioma in later life. Thus, there is concern over exposure of school children to asbestos.

Other Cancer--It is suspected that exposure to asbestos fibers may cause malignant tumors or cancer of the esophagus, larynx, oral cavity, stomach, colon, kidney, and other vital organs. Based on this, scientists conclude that asbestos fibers that are inhaled are absorbed into the blood stream and carried to parts of the body.

Researchers report that there does not appear to be a safe level of exposure to asbestos. A consensus of opinion has not been reached concerning the causal relationship between malignant or nonmalignant respiratory diseases and the following exposure parameters:

- Fiber size,
- Fiber type;
- Fiber concentration, and
- Duration of exposure.

It has been predicted (Dr. Irving Selikoff, Mt. Sinai Hospital) that between now and the end of the century, an American will die of asbestos-related disease every hour, a death toll of nearly 200,000.

Pathways of Exposure

There are three basic routes of exposure which could result in inhalation of asbestos fibers:

Neighborhood Exposure--Pathway explicitly addressed by the asbestos NESHAP standard. Neighborhood exposure can result from people living or working near asbestos mines, asbestos manufacturing or fabricating plants, buildings containing asbestos that will be demolished or renovated, or living or working near a site where equipment or machinery is sprayed with an asbestos-containing fireproofing or insulating material.

Occupational Exposure--This pathway includes:

- Direct occupational exposure, resulting from working in asbestos mines, asbestos mills, or asbestos manufacturing or fabricating plants.

- Indirect occupational exposure, resulting from working with asbestos-containing products such as construction workers, auto mechanics, roofers, demolition and renovation contractors.

  Indirect occupational exposure also results from people working in the vicinity where material containing asbestos has been disturbed. For example, electricians or plumbers who might cut through asbestos-containing material to install or repair wiring or pipes.

- Para-Occupational Exposure. This involves being exposed unknowingly. Examples include family members of workers exposed either directly or indirectly on the job. Under this situation, asbestos fibers are brought into the household on work clothes that have not been decontaminated.

  Another para-occupational exposure pathway results from the release of asbestos fibers from friable asbestos materials applied in buildings that are deteriorating or have been disturbed. This can occur in schools, public meeting rooms, offices, airport terminals, gymnasiums, cafeterias, libraries, and many other locations.

Ambient Background Exposure--Asbestos exposure by this pathway results from the release of fibers from the weathering of exposed asbestos-bearing rocks, and the general release of fibers from the use or weathering of such products as brake linings or exterior construction products that contain asbestos, such as shingles or cladding.

REGULATORY HISTORY

The Asbestos NESHAP regulation has been amended several times. The following dates and information highlight the progress of the regulation to date:

- April 6, 1973 - Original promulgation. Original regulations covered:
    - Asbestos mills;
    - Nine (9) manufacturing source categories;
    - Demolition of buildings containing friable asbestos-containing fireproofing and insulating material;
    - Restriction on the spraying of asbestos-containing materials on buildings and structures for fireproofing and insulating purposes, and
    - Restriction on surfacing of roadways with asbestos tailings.

- May 3, 1974 - Regulations were amended to expand coverage. Amendments included:
  - Clarification of definitions;
  - Expansion of demolition provisions;
  - Clarified no visible emission standard to exclude uncombined water from regulatory requirement.

- October 14, 1975 - Substantial changes were made. The new amendments included:
  - Addition of two (2) new manufacturing source categories, bringing total to eleven (11);
  - Inclusion of renovation projects with regulated demolition activities;
  - Added new activity to be regulated - 'Fabrication' of asbestos-containing products;
  - Adopted provision to prohibit use of wet applied and molded insulation (e.g., pipe lagging);
  - Expanded scope of regulation to cover asbestos-containing waste handling and disposal.

- March 2, 1977 - Subtle changes, mostly addressing definitions.

- June 19, 1978 Important changes made include:
  - Expanded coverage of spraying restriction to prohibit application of asbestos-containing materials for decorative purposes.

  - Adopted provision to exempt bituminous or resinous-based materials from the spraying restrictions.
  - Repromulgated certain work practice provisions.

- April 5, 1984 - Repromulgation to make existing work practices enforceable. The need to repromulgate stemmed from a Supreme Court decision in the case of Adamo Wrecking Company of Michigan versus United States. The court held that parts of the asbestos standard, in the form of work practice standards, were not emission standards within the meaning of Section 112 of the Clean Air Act as amended in 1970. Thus, certain work practice standards were deemed not enforceable.

  During the court case, the CAA was amended (August 7, 1977) to authorize the use of "design, equipment, work practice and operational standards." Some, but not all, of the work practice standards were repromulgated on June 19, 1978. The recent repromulgation of the entire standard ensures that all work practice standards are now enforceable. The standard was also rearranged, and parts of it reworded, for clarity.

ASBESTOS SOURCES

The following are sources of airborne asbestos fibers regulated to some degree by the NESHAPs program.

- Asbestos mills;
- Surfacing of roadways with asbestos-containing material;
- Manufacture of products using commercial asbestos;
- The demolition and/or renovation of buildings, structures, installations that contain friable asbestos material;
- Restriction on the spraying of asbestos-containing materials;
- Fabrication of certain asbestos-containing products;
- Restriction on the use of insulating materials;
- Waste disposal at asbestos mills;
- Disposal of asbestos-containing waste generated during manufacturing, demolition, renovation, spraying, and fabrication operations;
- Closure of inactive waste disposal sites on plant property at mills, manufacturing, and fabricating sources; and
- Active waste disposal sites.

3. NATIONAL REGULATORY STRATEGY

The following material summarizes EPA's "Asbestos Demolition and Renovation Enforcement Strategy" guidance from Headquarters to Regional agencies. The complete strategy document is available from the EPA Regional Offices.

OBJECTIVES

- To provide effective and uniform enforcement of the Asbestos NESHAP standard by Regions and the delegated states.
- To provide emphasis and assurance to Regions and states that EPA is committed to a strong, high priority enforcement posture.

BACKGROUND

- An EPA Compliance Data System analysis shows that the number of demolition/renovation sources is greater than the number of sources in all other regulated categories combined, and compliance status for demolition/renovation sources is much worse.
- The recent repromulgation of the entire asbestos NESHAP standard has ensured that all work practice requirements for demolition/renovation operations are now enforceable.

STRATEGY

- Train Regional and state personnel, using EPA's Regional Workshop, to perform inspections of asbestos demolition and renovation sources.

- Publicize the asbestos NESHAP requirements by the following mechanisms:
  - National and local press releases;
  - Letters to contractors advising them of the regulations;
  - Letters to potentially-affected sources advising them of the regulations; and
  - Speaking engagements with trade and industry organizations, and journal articles, presenting the status of regulations and recommendations.

  These policies will be facilitated by a clear line of communication from Regions to states, to disseminate information from Headquarters.

- Inspect demolition and renovation sources to determine compliance, including locating and inspecting non-notifiers. An inspection plan may include all sources, all contractors, or any other program to meet the Agency goal of 100 percent compliance. Grant agreements currently negotiated with states should specify that inspections of demolition and renovation sources are required.

- Analyze bulk samples for asbestos using laboratories to be identified by EPA, with future provisions for laboratories with a rapid turnaround time in case of an emergency.

- Coordinate the NESHAPs program with EPA's TSCA program (Asbestos In Schools), and the OSHA program for worker exposure. Coordination of notifications is deemed most practical, but Regions are free to institute any joint efforts which result in effective NESHAP enforcement.

- Enforce NESHAPs provisions by legal mechanisms summarized below. In cases where enforcement authority is delegated to states, Regions are responsible for evaluating the adequacy of state action and initiating appropriate Federal enforcement action.

Informal action:

A "Finding of Violation" may be issued to the source, and/or the source may be invited to a "show cause" conference to determine whether immediate compliance can be achieved without formal enforcement proceedings. These actions may be appropriate if a source has properly notified EPA and is making a good faith effort to comply, but is failing in some respects.

Administrative action:

1. A Section 113(a)(3) order can require immediate compliance, and if violated sets the stage for liability to penalties under Section 113(b) judicial action. This order may be appropriate if a source indicates that an initial, insubstantial violation will not be repeated.

2. A Section 303 order can require immediate compliance, and if violated sets the stage for liability to penalties under a Section 303 civil action. This order must be based on a finding of "imminent and substantial endangerment" to the public health, and EPA must confer with state and local authorities (even if the state has no delegated authority) to confirm the basis for this order. A Section 303 order may be appropriate in instances where a violation is in question and a broader authority is needed to abate a health hazard.

Judicial action:

1. A Section 113(b) civil action can require immediate compliance while allowing EPA to seek civil penalties of up to $25,000 per day of violation. This action would be appropriate in most cases where immediate judicial relief is sought for substantial violations of the asbestos NESHAP standard.

2. A Section 113(c) criminal action can result in liability to imprisonment of up to one year and/or penalties of up to $25,000 per day of violation. This action would be appropriate if EPA has evidence that a person knowingly violated the asbestos NESHAP.

   Judicial action under Sections 113(b) or (c) may also be appropriate if a source has completed or nearly completed its activities by the time EPA is ready to take enforcement action. In this case, judicial action may be an effective deterrent to future violations.

3. A Section 303 civil action can require immediate compliance based on a finding of "imminent and substantial endangerment" to the public health. As mentioned above, EPA must confirm the basis for endangerment with state and local authorities. Penalties may not be sought under this action unless the Agency has previously issued a Section 303 administrative order which the source has violated, in which case the source is liable to penalties of up to $5,000 per day of violation.

   (EPA's strategy document offers additional enforcement guidance, including procedures to implement legal action and to assess civil penalties.)

- Track and audit compliance programs. Audit procedures should include joint Region-state inspections and semiannual reviews of state inspection reports. Compliance tracking by Regions or states should include information on the number of notifications received, number of projects inspected, number of violations, number of notification violations, and the manner of resolution of the violations. Guidelines for using CDS as a tracking mechanism are contained in EPA's strategy document. SSCD is currently developing a national register of contractors which have been cited for a violation of asbestos provisions, and all states and Regions are requested to submit data for this register.

- Accountability of Regions and states will be augmented by quarterly reporting of performance indicators: total number of notifications, total number of inspections total number of violations, and violation status.

4. DEMOLITION AND RENOVATION REGULATIONS

The EPA regulations on NESHAPs are referenced as 40 CFR Part 61. During the repromulgation, 40 CFR Part 61 has been amended by redesignating the National Emission Standard for Asbestos - Subpart B (61.20 - 61.25) as Subpart M (61.140 - 61.156). The following text is an overview of the regulation, but should not be construed to amend or replace it in any way. The complete regulation is contained in Appendix A.

The asbestos standard has not changed in substance. The repromulgation is intended to reinstate certain work practices. The main thrust of the work practices and the thrust of this workshop deals with asbestos as it pertains to demolition and renovation activities.

DEFINITIONS

- Friable Asbestos Material (FAM)--Any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

- Demolition--The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

- Renovation--Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

- Emergency Renovation--A renovation operation that was not planned, but results from a sudden, unexpected event. This term includes operations necessitated by nonroutine failures of equipment.

- Planned Renovation--A renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

- Facility--Any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings with four or less dwelling units).

- Facility Component--Any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility; or any structural member of a facility.

- Adequately Wetted--Sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

- Outside Air--The air outside buildings and structures.

APPLICABILITY OF STANDARD

Quantity of Asbestos

- If the amount of materials containing more than 1 percent friable asbestos that will be disturbed during renovation or demolition operations is at least 80 linear meters on pipes or at least 15 square meters on other facility components, all notification (61.146) and emission control procedures (61.147) apply.

- If the amount of materials containing more than 1 percent friable asbestos that will be disturbed during demolition is less than the previously stated quantity, only notification is required. This notification allows the EPA to inspect the facility to assess the quantity of asbestos.

- If the amount of materials containing more than 1 percent friable asbestos that will be disturbed during renovation is less than the previously stated quantity, the standard does not apply.

NOTIFICATION REQUIREMENTS

Notifying Responsibility

- Each owner or operator intending to demolish a facility must provide the Administrator with a written notice.

- Each owner or operator intending to renovate a facility who is subject to the standard must provide the Administrator with a written notice.

Lead Time

- Postmarked 10 days before demolition activity begins if more than 80 linear meters or 15 square meters of friable asbestos will be removed.

- Postmarked 20 days before demolition activity begins if less than 80 linear meters or 15 square meters of friable asbestos will be removed.

- Postmarked as early as possible before renovation activity begins if more than 80 linear meters or 15 square meters of friable asbestos will be removed.

- The purpose of the additional notification lead time when less than the prescribed amount of asbestos is reported for demolition is to allow EPA time to inspect and determine agreement with the reported quantity of friable asbestos.

- If a facility has been deemed as structurally unsound by a governmental agency, notification of demolition shall be made as early as possible.

Contents of Notification

Whenever notification is required, the following minimum information should be included:

- Name and address of owner or operator;
- Building description;
    - Size - square feet, number of floors;
    - Age - dates of original construction, and renovations;
    - Use - i.e., office, school, industrial, etc.
- Amount of friable asbestos, and for demolitions below the applicable limits, an explanation of techniques used to determine the amount;
- Building location/address; and
- Work schedule, including the starting and completion dates.

If the facility is estimated by the owner or operator to have more than 80 linear meters or 15 square meters of friable asbestos material, the following additional information should also be included in the notification:

- Demolition or renovation method(s) to be employed;
- Procedures for removal of friable asbestos;

- Name and location of disposal site where friable asbestos waste material will be deposited; and

- Name, title, and authority of governmental representative ordering demolition of a facility deemed structurally unsound.

PROCEDURES FOR ASBESTOS EMISSION CONTROL

Removal of Friable Asbestos Material

- Each owner or operator of a facility containing more than the previously stated quantity of FAM shall prevent emissions of particulate asbestos material to the outside air by removing all FAM from the facility, which would potentially be disturbed during the renovation or demolition activities.

- Materials containing friable asbestos may be stripped in place and properly disposed or removed from the facility in large sections for stripping and proper disposal at a separate location.

- If the facility is being demolished under an order of a governmental agency because it is structurally unsound and in danger of imminent collapse, there is no requirement to remove the friable asbestos, but the portion of the facility that contains the material must be adequately wetted during demolition (except under freezing conditions).

- Friable asbestos encased in concrete is not required to be removed prior to demolition, but must be wetted whenever exposed during demolition (except under freezing conditions).

Wetting and Handling Friable Asbestos Materials

- During cutting, disjoining or stripping operations, the owner or operator shall adequately wet any exposed friable asbestos.

- Stripped wetted friable material shall be carefully lowered to the ground or a lower floor, not dropped or thrown.

- For transport of stripped FAM (except units removed as sections) more than 50 feet above ground, dust-tight chutes or containers must be employed.

- Units or sections containing friable asbestos must be carefully moved to ground level, not dropped or thrown.

- If a facility component has been removed from a structurally unsound building for stripping, the asbestos material must be adequately wetted or exhausted to a local exhaust ventilation and collection system (with no visible emissions) and properly disposed.

- Friable asbestos materials that have been removed must remain wet until they are collected for disposal.

- Wetting may be accomplished in many ways; such as hand-held pump tanks, faucet tap, or water barrel with a pump, hose and nozzle.

- Surfactants, although not required, are commonly added to water to aid penetration and wetting of asbestos fibers. Use of a surfactant also reduces the amount of water required for wetting. Current EPA guidance recommends using 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether, or the equivalent, in a 0.16 percent solution (1 oz per 5 gallons) of water (EPA-450/2-78-014).

- If the temperature at the point of a friable asbestos removal activity is below freezing (0°C), the owner or operator need not wet FAM during removal, but should try to remove the materials as units to a location where they can be stripped while being wetted or evacuated to a dust collection system.

Local Exhaust Ventilation (LEV)

- In renovation operations where the Administrator agrees that wetting would cause damage to equipment, the owner or operator shall use a local exhaust ventilation and collection system.

- Also, if facility components have been taken out of the facility for stripping friable asbestos material, the owner or operator may choose to use a local exhaust ventilation and collection system rather than follow the wetting requirements above.

- If a collection system is employed, it must exhibit no visible emissions to the outside air or be operated within the air cleaning requirements listed below.

AIR CLEANING CONTROL DEVICES

- Under the condition previously described, an owner or operator may choose to control friable asbestos emissions during demolition or renovation operations by an air-cleaning device.

- The recommended air-cleaning device is a fabric filter. The most common fabric filter used is a baghouse. Other filters, not specifically recommended for use, include high efficiency particulate air filters (HEPA) and furnace exhaust filters.

- However, if the use of fabric filters creates a fire or explosion hazard, the owner or operator, with approval from the regulatory agency, may use a wet collector designed to operate with a unit contacting energy (pressure drop) of at least 40 inches water gauge.

- Or, the owner or operator may, with Agency approval, use another control device that is equivalent to either of the above in filtering particulate asbestos material.

FABRIC FILTER OPERATING CONDITIONS

- PRESSURE DROP: ≤4 INCHES WATER GAGE
- AIR FLOW PERMEABILITY:
  - WOVEN FABRIC ≤ 30 $FT^3/MIN/FT^2$
  - FELTED FABRIC ≤ 35 $FT^3/MIN/FT^2$
- BAG WEIGHT: FOR FELTED FABRIC, AT LEAST 14 OZ/YD^2
- BAG THICKNESS: FOR FELTED FABRIC, AT LEAST 1/16 INCH
- FILL YARN IN SYNTHETIC FABRICS SHOULD BE SPUN

- If the owner or operator elects to comply with the air-cleaning provisions rather than the no-VE standard, he must operate the unit according to these parameters. These conditions were established by EPA based on design criteria and not necessarily operating experience.

- The fabric filter must be operated such that the pressure drop across the filter is less than or equal to 4 inches water gauge. This pressure loss of 4 inches is based on a design criteria established to prevent the installation of an undersized unit, whereby the air-to-cloth ratio is so high that it places a heavy burden on the collecting fabric, thus possibly shortening its service life or causing frequent failures due to excessive pressure buildup on the fabric surface.

- In addition to these operating conditions the asbestos standard requires that all air-cleaning devices must be properly installed, operated, and maintained.

- Bypass devices may be used only during upset or emergency conditions, and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

- Important Note: If a source cannot meet the air-cleaning requirements when it has elected to do so, it defaults to the no visible emission standard.

WASTE DISPOSAL

Asbestos-Containing Wastes

- As identified by the standard, demolition and renovation asbestos-containing wastes include:
  - Friable asbestos waste; and
  - Control device asbestos waste, including slurries.

- Inspectors should be aware of the dust potential for other asbestos-containing wastes, such as:
  - Plastic sheeting used to seal room;
  - Personal protection equipment; and
  - Cleanup equipment waste.

Waste Handling Methods

- The owner or operator responsible for generating asbestos-containing waste material shall discharge no visible emissions to the outside air during collection, processing, packaging, transporting, or deposition of the material.

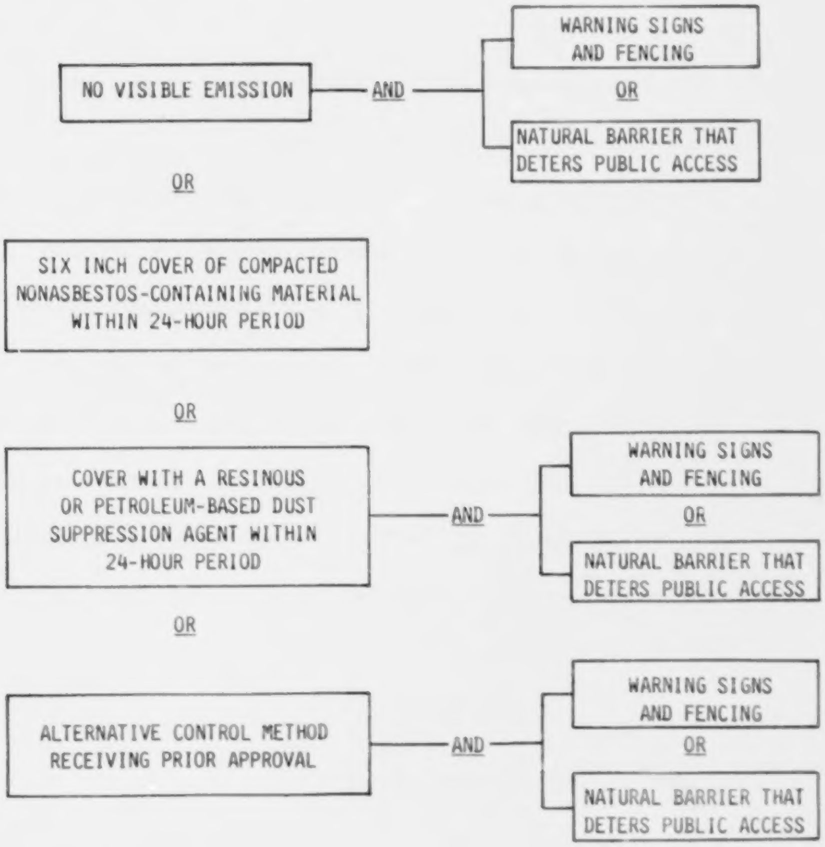
- As an alternative to the no visible emission requirement, one of the following disposal methods may be used:
    - Treatment with water. Must meet visible emission standard or air cleaning provision during collection, mixing, and wetting operations. After wetting, all asbestos-containing waste must be sealed in leak-tight containers while wet, and labeled;
    - Processing into nonfriable forms (such as pellets or other shapes). Must meet visible emission standard or air cleaning provision during collection and processing operations;
    - Alternate method. Requires approval of the Administrator prior to implementation.

Waste Disposal Site Provisions

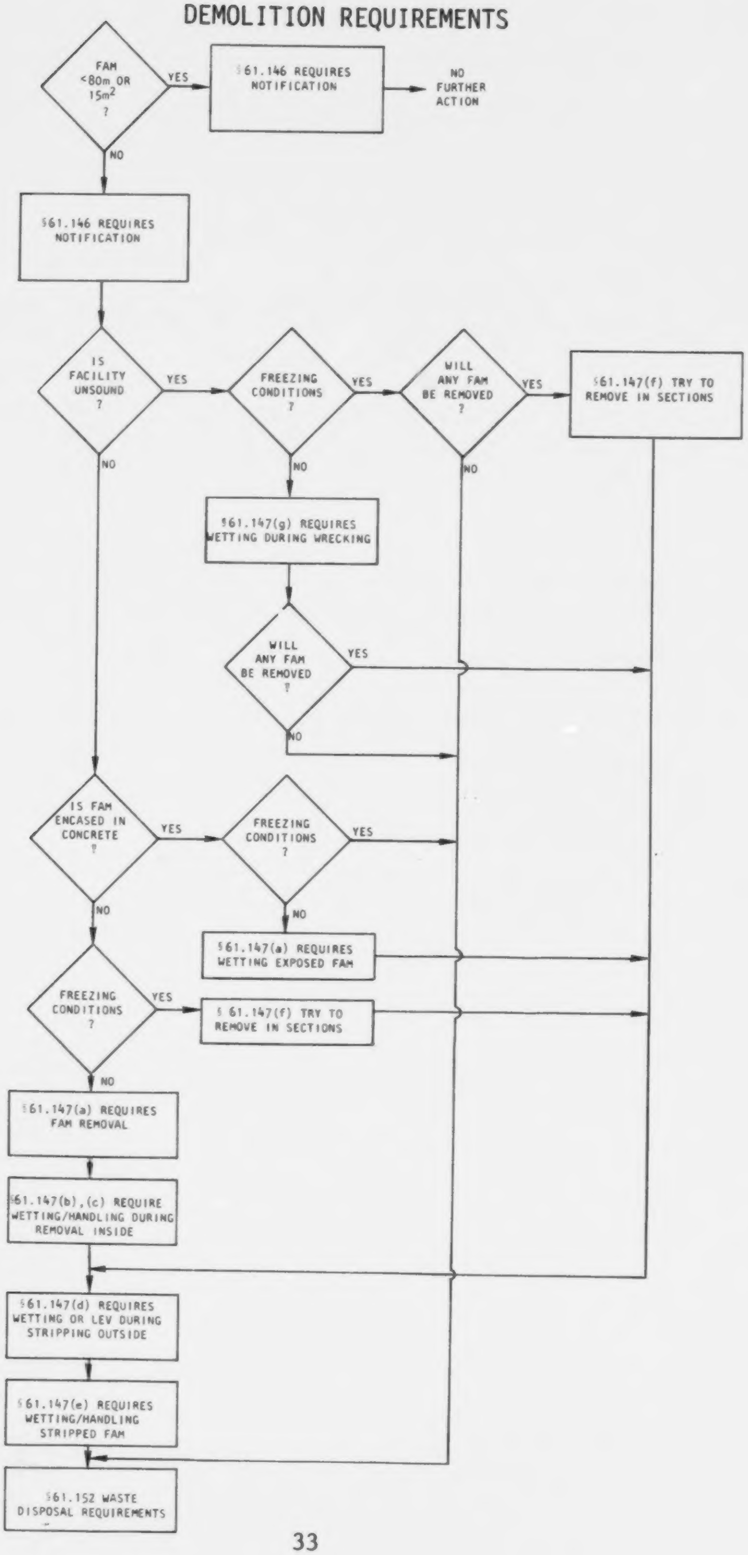
- It is the responsibility of the generator, not the site operator, to assure that the asbestos wastes are disposed of in compliance with regulations.

- To be an acceptable site for disposal of asbestos-containing waste material, an active disposal site must meet one of the following criteria:

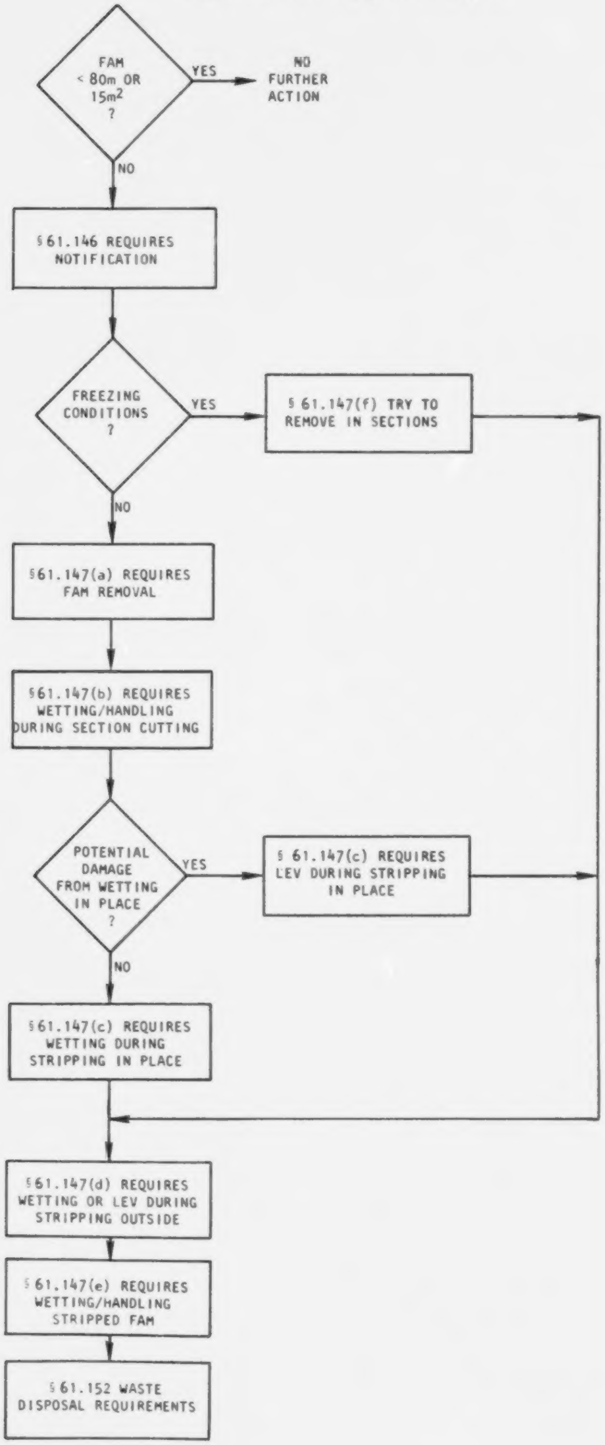
ACTIVE WASTE DISPOSAL SITE PROVISION


NO VISIBLE EMISSION
AND
WARNING SIGNS AND FENCING
OR
NATURAL BARRIER THAT DETERS PUBLIC ACCESS
OR
SIX INCH COVER OF COMPACTED NONASBESTOS-CONTAINING MATERIAL WITHIN 24-HOUR PERIOD
OR
COVER WITH A RESINOUS OR PETROLEUM-BASED DUST SUPPRESSION AGENT WITHIN 24-HOUR PERIOD
AND
WARNING SIGNS AND FENCING
OR
NATURAL BARRIER THAT DETERS PUBLIC ACCESS
OR
ALTERNATIVE CONTROL METHOD RECEIVING PRIOR APPROVAL
AND
WARNING SIGNS AND FENCING
OR
NATURAL BARRIER THAT DETERS PUBLIC ACCESS

DEMOLITION REQUIREMENTS


FAM <80m OR 15m^2 ?
YES
§61.146 REQUIRES NOTIFICATION
NO FURTHER ACTION
NO
§61.146 REQUIRES NOTIFICATION
IS FACILITY UNSOUND ?
YES
FREEZING CONDITIONS ?
YES
WILL ANY FAM BE REMOVED ?
YES
§61.147(f) TRY TO REMOVE IN SECTIONS
NO
NO
NO
§61.147(g) REQUIRES WETTING DURING WRECKING
WILL ANY FAM BE REMOVED ?
YES
NO
IS FAM ENCASED IN CONCRETE ?
YES
FREEZING CONDITIONS ?
YES
NO
NO
§61.147(a) REQUIRES WETTING EXPOSED FAM
FREEZING CONDITIONS ?
YES
§ 61.147(f) TRY TO REMOVE IN SECTIONS
NO
§61.147(a) REQUIRES FAM REMOVAL
§61.147(b),(c) REQUIRE WETTING/HANDLING DURING REMOVAL INSIDE
§61.147(d) REQUIRES WETTING OR LEV DURING STRIPPING OUTSIDE
§61.147(e) REQUIRES WETTING/HANDLING STRIPPED FAM
§61.152 WASTE DISPOSAL REQUIREMENTS

RENOVATION REQUIREMENTS


FAM < 80m OR 15m² ?
YES
NO FURTHER ACTION
NO
§ 61.146 REQUIRES NOTIFICATION
FREEZING CONDITIONS ?
YES
§ 61.147(f) TRY TO REMOVE IN SECTIONS
NO
§61.147(a) REQUIRES FAM REMOVAL
§61.147(b) REQUIRES WETTING/HANDLING DURING SECTION CUTTING
POTENTIAL DAMAGE FROM WETTING IN PLACE ?
YES
§ 61.147(c) REQUIRES LEV DURING STRIPPING IN PLACE
NO
§61.147(c) REQUIRES WETTING DURING STRIPPING IN PLACE
§61.147(d) REQUIRES WETTING OR LEV DURING STRIPPING OUTSIDE
§ 61.147(e) REQUIRES WETTING/HANDLING STRIPPED FAM
§ 61.152 WASTE DISPOSAL REQUIREMENTS

FUTURE DEVELOPMENTS - POSSIBLE REVISIONS

Issues that are currently under consideration for incorporation into future amendments to the asbestos standards are as follows:

- Add new source categories.
    - Encapsulation process of spray-applied or trowelled-on FAM in buildings.
    - Offsite waste disposal sites - to regulate these sources directly, i.e., to place responsibility for emission control on the waste disposal site operator.

- Tighten waste handling and disposal procedures.
    - Require a thicker depth of cover material.
    - Require more specific waste containerization.
    - Require recordkeeping of waste disposal.

- Expand demolition and renovation notification requirements to include a telephone call, thereby eliminating delays with mail system.

- Strengthen demolition and renovation control measures.
    - Require more stringent air emission controls at site.
    - Add a cleanup requirement provision for renovation projects that assures a certain asbestos air concentration is met at the job completion.

- Adopt a reference test method for analysis of asbestos content in bulk samples.

- Include notification in a property deed which would cover landfills where asbestos waste is buried and buildings where FAM was encapsulated or enclosed and thus remains in the building.

- Disposal may be regulated under RCRA.

Note that these issues are only under consideration. Any repromulgation that would include these or other items might not occur for two to three years from now. Comments or questions regarding future revisions should be addressed to John Copeland at 919/541-5595 or FTS 629-5595.

5. ASBESTOS IN SCHOOLS

BACKGROUND

EPA's Office of Pesticides and Toxic Substances (OPTS) issued this rule to reduce the health risk from exposure to asbestos-containing materials in school buildings (listed under 40 CFR Part 763, Subpart F). The rule applies to public and private elementary and secondary (grade 12 and under) schools. The rule requires local education agencies to identify friable asbestos-containing material (FAM) by inspection and sampling, notify employees and parent-teacher associations of the inspection results, and maintain records of the inspection results. The rule exempts schools built after December 31, 1978 and schools in which FAM has been adequately removed, enclosed, or encapsulated.

The Asbestos In Schools rule does not contain abatement provisions whereby corrective action is required to remove FAM or eliminate the exposure risk. This has been a major criticism of the rule. EPA is currently in an advisory role and has allowed the localities to determine abatement strategies. However, EPA has supplied guidance and is continuing to develop and publish data regarding abatement techniques (see FR Vol. 49, No. 46, March 7, 1984).

REQUIREMENTS

§763.105 Inspection for friable material.

- All areas must be inspected, including behind suspended ceilings or other nonpermanent structures which may be entered for routine maintenance;
- Friable materials must be located by touching; nonfriable materials are not to be disturbed; and
- Inspection procedures are given in "Asbestos-Containing Materials in School Buildings: A Guidance Document" (EPA No. C00090).

§763.107 Sampling friable material.

- Friable materials shall be classified as distinct sampling areas and at least 3 samples are to be taken from each area at random locations according to procedures in EPA-560/13-80-017.

§763.109 Analyzing friable material.

- Samples are analyzed for asbestos using Polarized Light Microscopy (PLM), supplemented where necessary by X-ray Diffraction (see method contained in Appendix A to 40 CFR Part 763 Subpart F);

- List of qualified laboratories, updated semiannually, is available from RTI (1-800-334-8571); and

- Use of electron microscopy for sample analysis is not allowed after June 28, 1982.

§763.111 Warnings and Notifications where asbestos is present.

- Notice to School Employees (EPA Form 7730-3) shall be posted in certain areas and remain posted indefinitely in any school containing FAM;

- A written notice of the location of all FAM shall be supplied to each building employee;

- A copy of the "Guide for Reducing Asbestos Exposure" (EPA Form 7730-2) shall be distributed to all custodial or maintenance employees; and

- Parents of school children shall be notified directly, or through Parent-Teacher Associations (PTA), of the inspection results.

§763.114 Recordkeeping. The following records are to be made publicly available on request:

- A record in each school of the inspection program, including for schools which contain FAM:
  - location of each sampling area, and estimate of asbestos content;
  - location of each sample within an area, and the I.D. number;
  - copies of all laboratory reports and correspondence with laboratories concerning analyses;

- For schools which contain FAM, copies in each school of the "Guide for Reducing Asbestos Exposure", EPA Guidance Document No. C00090, and the Notice to School Employees;

- At each school a statement that the requirements of the rule have been satisfied, signed and dated by the person responsible for compliance;

- At each local education agency a list of schools under their authority and the inspection status of each; and for schools which contain FAM, the total area of such material and the number of employees who regularly work in the school; and

- At each local education agency a completed inspection record (EPA Form 7730-1).

§763.117 Exemptions. The following are exempt from all provisions of the Asbestos In Schools rule:

- Schools built after December 31, 1978;

- Schools in which all FAM has been eliminated by removal, or has been isolated by air-tight enclosure with restricted access;

- Schools in which all FAM has been eliminated by satisfactory encapsulation;

- Schools which were inspected, sampled, and analyzed prior to the effective date of this rule in accordance with all provisions of this rule, and which were found to contain no FAM; provided that the school maintains on record copies of all laboratory reports and a certifying statement that no FAM is present; and

- Schools which can document that no FAM was used in building construction, modification, and renovation; provided that the school maintains on record a certifying statement that no FAM is present.

The following are exempt from the Inspection (§763.105), Sampling (§763.107), and Analysis (§763.109) requirements:

- Schools which were inspected, sampled, and analyzed prior to the effective date of this rule in accordance with all of the provisions of this rule (and in which FAM was found); and

- Schools which certify that all friable materials shall be treated as asbestos-containing, and which specify the location of such material.

ABATEMENT TECHNIQUES

EPA has not promulgated mandatory abatement requirements due to certain technical obstacles (see 49 FR 8450). However, EPA has developed guidance for abatement decisions that is summarized in "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," EPA-560/5-83-002, March 1983. There are four general control measures to reduce asbestos exposure risk:

- removal;
- enclosure;
- encapsulation; and
- maintenance and reassessment program.

Further guidance regarding control measures is available from Regional Asbestos Coordinators (RACs) and Technical Advisors (TAs).

Removal consists of debonding the FAM and discarding it.

- Applicable to all situations.

- Advantages:
  - eliminates asbestos permanently.

- Disadvantages:
    - replacement with substitute material may be necessary;
    - porous surfaces may also require encapsulation to control residual material; and
    - requires compliance with OSHA and NESHAP regulations to prevent an increase in fiber levels.

Enclosure consists of constructing an air-tight barrier between the FAM (left intact) and the building occupants.

- Applicable when:
    - disturbance or entry into the enclosed area appears to be unlikely; and
    - FAM is undamaged and current fiber release rate appears to be low.

- Advantages:
    - controls current fiber release; and
    - typically has a lower capital cost than removal.

- Disadvantages:
    - must maintain enclosure and control access;
    - enclosure construction may increase fiber levels; and
    - long-term costs could be higher than for removal.

Encapsulation consists of applying a penetrating or bridging sealant to the FAM (left intact) to render it nonfriable.

- Applicable when:
  - FAM retains bonding integrity to substrate and is undamaged;
  - FAM is not highly accessible; and
  - FAM is granular or cementitous rather than fibrous or fluffy.

- Advantages:
  - reduces current fiber release;
  - typically has a lower capital cost than removal.

- Disadvantages:
  - must maintain sealant integrity and control access;
  - sealant may cause FAM to delaminate;
  - encapsulated material is more difficult to remove and may require dry techniques for eventual removal; and
  - long-term costs could be higher than for removal.

- Guidelines for sealant use:
  - Battelle has evaluated sealants for EPA based on impact resistance, flame spread, smoke generation, toxic gas generation during combustion, and adhesive/cohesive strength. Thirty-four commercially available products were determined as acceptable by Battelle, based on laboratory tests with a mineral wool matrix (see attached list). Note that EPA has not endorsed any of the products on this list.

- A selected sealant should be tested for several days prior to widespread use, to determine if delamination or deterioration is a concern;
- Coverage should be greater than one gallon/100 sq. ft.;
- Sealant should be applied with airless spray equipment, using a light coat followed by a full coat at a 90 degree angle; and
- Sealant should not be applied to FAM thicker than 1.25 inches due to the delamination hazard.

Maintenance and Reassessment consists of special housekeeping procedures, maintenance precautions, and inspection procedures to minimize the exposure risk.

- Applicable when:
  - a temporary control measure is needed until a more permanent solution is implemented; and
  - FAM is in good condition and the potential for disturbance appears to be low.

- Advantages:
  - least expensive control measure.

- Disadvantages:
  - must control access to FAM and periodically reassess condition;
  - no reduction in current fiber release rate.

Selection of a Control Measure

The following parameters must be considered:

- Size of the material application and how this affects the overall job price;
- Accessability;
- Condition of the material, whether deteriorating or stable;
- Type of substrate, which influences:
    - the potential for delamination with an encapsulant; and
    - if porous, the need for an encapsulant after removal operations;
- Thickness of the material, since encapsulants are only recommended for FAM less than 1.25 inches thick; and
- Building use and future conditions which might affect fiber release.

Summary

- Removal has the widest applicability of all control alternatives. It is also the only true permanent solution, since no building containing asbestos can be demolished without first removing the material (>80 linear meters or 15 square meters). It is the only control measure which can guarantee elimination of asbestos exposure. Although the initial cost may be higher than for other control methods, the long-term cost is probably lower.

- Enclosure and encapsulation must be followed with a special operations program and with periodic reinspection of the enclosed or encapsulated materials.

- Removal, enclosure, and encapsulation should be undertaken only after construction of sealed containment barriers.

- Proper worker protection is mandated by OSHA for removal operations, and is needed for enclosure and encapsulation activities as well.

FUTURE DEVELOPMENTS

The Asbestos In Schools rule may be expanded in the future to address abatement requirements. The agency is currently considering the following actions to support and improve the rule:

- Establishing a clearinghouse to facilitate the exchange of technical information regarding asbestos abatement;

- Establishing a nationwide training program for States, contractors, parents, maintenance and abatement workers, teachers, and others;

- Requiring certification of asbestos abatement contractors;

- Requiring periodic reinspections of schools that decided not to remove FAM; and

- Requiring asbestos abatement, and establishing standards for abatement activities and the protection of abatement workers. For example, studies have shown a substantial fiber release during encapsulation, up to 100 times the OSHA standard of 2 f/cc.

- Banning asbestos in certain products and phasing down use of asbestos products over a 10-year period.

EPA is conducting a two-year compliance monitoring program to address current violations of the rule. Resources allocated for inspections and case development have been increased. The agency is conducting a national survey over the next few months to estimate overall compliance and assess the extent of abatement actions.

SEALANTS RECOMMENDED AS ACCEPTABLE BY BATTELLE

Product	Manufacturer
L241-43, Parts A and B	Carboline Co., St. Louis, MO
Metro-shield	Bertelson Associates, Inc., Tinton Falls, NJ
Mono-therm F-100	Mono-therm Industries Inc., Kirkland, WA
Penqua 200	United Coatings, Spokane, WA
Product No. 1583, 32-20 and 32-21	H.B. Fuller Co., Springhouse, PA
Pyrokote-MX	Development Services Int'l., Washington, D.C.
Aqualoid 15-10	Essex Chemical Corp., Jamestown, NY
Chemex Ultra Seal	Chemex Chemical & Coating Co., Tampa, FL
C-1019	California Products Corp., Cambridge, MA
Dust-Set	Mateson Chemical Corp., Philadelphia, PA
FRC-REPC FRC-AES	FRC Composites Ltd., Don Mills, Ontario
Hygienscote	Acalor Chemical Construction, Weston, Ontario
No. 207 Special Sealer	Makus Development Corp., Mercer Island, WA
25-2355	National Starch & Chemical Corp., Grand Prairie, TX
622-538	Findley Adhesives Inc., Elm Grove, WI
95-C-104 95-W-100	M.A. Bruder & Sons Inc., Broomall, PA
Super Chemseal	Chemray Coatings Corp., Middlesex, NJ
Thermatek	Protek Manufacturing, Milwaukee, WI
TC1-750	Therma-Coustics, Colton, CA
Ultra Lok 40-871	Cellin Manufacturing Inc., Springfield, VA
Water-based Polyester Water-based XD-DG	Dow Chemical Co., Midland, MI

SEALANTS RECOMMENDED AS ACCEPTABLE BY BATTELLE (Continued)

Product	Manufacturer
Asbestite 2000	Arpin Products Inc., Oakhurst, NJ
Asbestop BW225	McGeddy Int'l. Inc., W. Long Beach, NJ
Cable Coating 2-B	American Coatings Corp., Chicago, IL
Cafco-Bond-Seal	U.S. Mineral Products Co., Stanhope, NJ
Decadex Firecheck	Pentagon Plastics Ltd., W. Palm Beach, FL
EX-64-2	Lehman Bros. Corp., Jersey City, NJ
Ocean 666	Flame-Crete Co. of Canada, Ottawa, Ontario
HI-6625-583-9	Habersham Industries Inc., Smyrna, GA
SK-13 Emulsion	National Cellulose Corp., Houston, TX

6. OSHA ASBESTOS PROGRAM

BACKGROUND

- The Occupational Safety and Health Administration (OSHA) develops and enforces regulations to protect the health of workers, rather than the general population. OSHA standards and requirements apply to the workplace, but not to the ambient atmosphere outside a workplace.

- OSHA is advised on technical matters by the National Institute for Occupational Safety and Health (NIOSH).

- OSHA is a member, with EPA and the Consumer Product Safety Commission, of the Federal Asbestos Task Force established in June 1983. This group was assembled to develop a unified Federal approach for the regulation of asbestos.

- EPA and OSHA have been mandated to coordinate on asbestos regulation where possible. Each EPA Region should have a system for referring potential violators to OSHA personnel for investigation.

REGULATORY HISTORY

- OSHA adopted a 12 f/cc limit on May 29, 1971 in the initial promulgation of OSHA standards.

- OSHA issued an ETS on December 7, 1971 lowering the permissible exposure limits to 5 f/cc on an 8-hour time-weighted average (TWA) basis and 10 f/cc for a peak exposure.

- OSHA promulgated the current standard in June 1972, which includes permissible exposures of:
  - 5 f/cc on an 8-hour TWA, effective July 7, 1972;
  - 2 f/cc on an 8-hour TWA, effective July 1, 1976;
  - 10 f/cc ceiling limit.

  This standard was based on the determination that it would prevent asbestosis, and reduce the risk of cancer to an undefined extent. The standard includes requirements for compliance methods, monitoring, medical surveillance, and housekeeping.

- In 1975, OSHA proposed to reduce exposure limits to 0.5 f/cc on an 8-hour TWA basis and 5 f/cc ceiling limit. The proposed rulemaking was based on accumulated evidence that asbestos is a human carcinogen. The proposed rule excluded the construction industry, but OSHA announced its intention to propose a separate rule for this source category. However, no such proposal was made, and no hearing was scheduled on the proposed standard revision.

- NIOSH recommended to OSHA on December 15, 1976 that the standard be lowered to "the lowest level detectable by available analytical techniques," 0.1 f/cc.

- OSHA issued an ETS on November 4, 1983 lowering the TWA exposure limit to 0.5 f/cc for all industries, and including revisions for worker training, respiratory protection, and warning signs. This ETS was based on "information and analyses which postdate the 1975 proposal" regarding the cancer risk. The ETS was held invalid by the U.S. Circuit Court of Appeals on March 7, 1984 in an action brought by the Asbestos Information Association (AIA).

- OSHA proposed a rule on April 10, 1984 similar to the previous ETS, except that the reduced exposure limit was specified as 0.2 f/cc or 0.5 f/cc on an 8-hour TWA basis, and additional employee training requirements were proposed. This proposal replaces the 1975 proposal, and applies to all workplaces including construction (or demolition/renovation) activities.

OSHA ASBESTOS STANDARD

29 CFR 1910.1001	Asbestos
29 CFR 1910.20	Access to employee exposure and medical records
29 CFR 1910.134	Respiratory protection
29 CFR 1910.141	Sanitation

Definition

- The definition of "asbestos fiber" is a mineral fiber longer than 5 micrometers which consists of chrysotile, amosite, crocidolite, tremolite, anthophyllite, or actinolite asbestos.

Permissible Exposure Levels

- 2 f/cc for an 8-hour TWA concentration.

- 10 f/cc for a ceiling concentration (15-minute sample).

Compliance Methods

- Engineering methods shall be used to meet the exposure limits, such as isolation, enclosure, exhaust ventilation, and dust collection.

- Work practices, such as wet methods (where applicable) and use of protective equipment for demolition/renovation workers, are also required. Demolition/renovation workers shall be provided with type "C" respirators (see below) and special protective clothing.

Protective Equipment

- Compliance with exposure limits shall not be achieved by use of respirators or shift rotations, except:
    - During the installation of engineering controls or work practices;
    - In situations where engineering controls and work practices are infeasible or insufficient; and
    - In emergency situations.

- Where respirators are used, they shall be approved by the Bureau of Mines or NIOSH, and the type shall be selected as follows:
    - Air purifying respirators are to be used when asbestos concentrations are expected to be no more than 10 times the ceiling or TWA exposure limits.
    - Powered air purifying respirators are to be used when asbestos concentrations are expected to be no more than 100 times, but at least 10 times the ceiling or TWA exposure limits.
    - Supplied-air (type "C") respirators are to be used when asbestos concentrations are expected to be more than 100 times the ceiling or TWA exposure limits.

- Special protective clothing shall be used by any employee exposed to asbestos concentrations above the permissible ceiling limit.

- Change rooms shall be provided at "fixed" workplaces to employees exposed to asbestos concentrations above the ceiling or TWA limits. Facilities shall include clothes lockers, and contaminated clothing shall be handled in sealed containers. Laundering shall be done so as to prevent exceedances of the permissible exposure limits.

Measurement

- Determinations of airborne concentrations shall be made using the membrane filter method at 400 to 450 magnification (4 mm objective) with phase contrast illumination.

Monitoring

- Samples shall be collected from within the breathing zones of employees, and in areas representative of such breathing zones, on membrane filters of 0.8 μm porosity in an open-face filter holder.

- Sampling required at intervals no greater than six months for employees whose exposure to asbestos is expected to exceed the exposure limits.

- Affected employees shall have the opportunity to observe such monitoring and shall have access to the records thereof.

Caution Signs and Labels

- Caution signs shall be posted at all locations where exposure limits may be exceeded, such that employees can read the signs before entering the marked location.

- Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing unbonded asbestos fibers which are expected to release fibers exceeding the exposure limits.

Housekeeping

- Surfaces shall be kept clean of asbestos fibers if their dispersion would result in an exposure limit exceedance.

- Asbestos-containing wastes, equipment, or clothing shall be disposed of in sealed containers if disposal would result in an exposure limit exceedance.

Recordkeeping

- Records of personal and environmental monitoring shall be maintained for at least 30 years, and shall be available upon request to employees and OSHA personnel.

- Any employee found to be subject to an exposure exceedance shall be notified in writing within 5 days of the finding, and shall be notified in a timely fashion of the corrective action taken.

Medical Examinations

- Medical examinations are required at the start of employment and at least annually thereafter, including 30 days before or after termination of employment.

- Medical examinations shall include at least a chest x-ray, a medical history, and pulmonary function tests.

- Records of medical examinations shall be retained for at least 30 years, and shall be provided upon request to employees and OSHA personnel.

FUTURE REVISIONS CONCERNING THE CONSTRUCTION INDUSTRY

OSHA is considering a separate asbestos standard for the construction industry, considering the transient nature of construction employment and changing conditions of exposure. OSHA raised the following issues in the current proposed rule:

- Should permissible exposure limits be the same as for other industries? The current proposed rule would not differentiate between the construction industry and other workplaces.

- How should monitoring be conducted? Monitoring a nonfixed workplace such as a demolition/renovation site may require fast laboratory analysis, increased sampling frequency, or use of test results from previous monitoring programs.

- Should exposure limits be attained by work practices only, without use of respirators? The current proposed rule would continue to require work practices to achieve a level of 2 f/cc, but would allow use of respirators to reduce exposure from 2 f/cc to the proposed limit (0.5 f/cc or 0.2 f/cc).

- Should respirators continue to be selected based on the degree of exceeding permissible exposure limits? If so, the proposed rule would require use of powered or full facepiece air purifying respirators at levels of 2 to 20 f/cc or 5 to 50 f/cc. OSHA has estimated that average exposures in the renovation and demolition industry are 20 f/cc without respirators.

- Should additional protective equipment be required for workers? The current standard specifies equipment for employees exposed to asbestos in excess of the ceiling limit.

- Should change rooms and clothes lockers also be required for nonfixed (construction) workplaces? Should additional hygiene facilities such as showers or lunch rooms be provided? The current standard does not include such requirements except for "fixed" workplaces.

- Should the requirement for medical examinations be revised for the construction industry? Expected problems with this program include tracking records for relatively transient employees, and use of medical tests to discriminate against less hardy job applicants.

- Should any recordkeeping requirements apply to the construction industry? Again, this relates to the temporary employment situation which is reportedly specific to the construction industry. Also, such records may not be useful in an epidemiology study since these workers are subject to continually changing exposure.

- Should additional regulatory provisions be instituted for the construction industry? OSHA is currently considering at least two provisions:
  - To exempt employers from certain duties based on use of classified new products, which have been shown not to result in exceedances of exposure limits (this provision would apply to installation operations, but not to demolition/renovation activities); and
  - To require employer reporting to OSHA prior to each job, and employee competency certification prior to performing asbestos work.

7. SAFETY EQUIPMENT

BACKGROUND

EPA has no specific requirements for safety equipment for their inspectors. The following safety equipment is suggested for inspectors, based on OSHA requirements for demolition/renovation workers. Note that demolition/renovation contractors may have additional safety requirements for each worksite, and may request the EPA inspector to comply with these requirements.

PROTECTIVE EQUIPMENT

- Respirator--OSHA requires one of three respirator groups to be used depending on the expected exposure level to asbestos fibers. Any respirator used should be approved by NIOSH or the Mine Safety Health Administration (MSHA), carrying a written statement of approval on the product data sheet or brochure. It is recommended that a respirator does not bond to the hood of a suit. The three general respirator groups and their recommended use are as follows:

  1. A reuseable or single use air purifying respirator when airborne asbestos concentrations are between 1x and 10x the OSHA ceiling or TWA standard. These are the levels most frequently encountered at demolition and renovation worksites,

according to OSHA. Note that cartridge approval for asbestos is typically recorded on the cartridge itself, or at least on the cartridge or mask shipping carton.

2. A powered air purifying respirator (belt mounted fan) with approved filter when airborne asbestos concentrations are between 10x and 100x the OSHA ceiling or TWA standard.

3. A continuous flow or pressure-demand, supplied-air respirator when asbestos concentrations are greater than 100x the OSHA ceiling or TWA standard. These levels may occur during active demolition or renovation operations.

- Safety Shoes--Safety-toe footwear must meet ANSI standard Z41.1-1967 requirements.

- Safety Glasses--Protective eyewear must meet ANSI standard Z87.1-1979 requirements.

- Hard Hat--Helmets must meet ANSI standard Z89.1-1981 requirements.

- Disposable Gloves--PVC gloves are recommended by EPA if any handling of asbestos material is anticipated.

- Disposable Suits--Recommended by EPA if any active demolition or renovation operations are anticipated. Some type of protective clothing is required by OSHA if ceiling limits are exceeded. EPA recommends disposables made of DuPont Tyvek® or an equivalent protective material. The suit should include hooded coveralls with attached boot covers.

Equipment Suppliers

The following suppliers of safety equipment were listed in the *Thomas Register 1984*:

Arizona -- Direct Safety Company (complete line of equipment)
Phoenix: 800-528-7405/602-968-7009

California -- Racher Distribution Company (complete line of equipment)
Menlo Park: 415-327-9249

-- E.D. Bullard Company (headgear, supplied-air respirators)
Sausalito: 415-332-0410

Colorado -- Thompson Respiration Products, Inc. (respirators)
Boulder: 303-443-3350

Connecticut -- M. Setlow & Son, Inc. (clothing)
Orange: 203-799-2315

Florida -- Amfac Safety, Inc. (complete line of equipment)
Miami: 305-446-5766

Illinois -- Latex Glove Co., Inc. (headgear, eyewear, respirators)
Northbrook: 800-323-8393/312-291-1600

-- Sellstrom Manufacturing Co. (headgear, eyewear, respirators)
Palatine: 312-358-2000

Louisiana -- Safety Supply House (complete line of equipment)
Belle Chasse: 504-394-7780

Maryland -- Racal Airstream, Inc. (respirators)
Fredrick: 301-695-8200

Michigan -- HSC Corporation (eyewear, respirators)
Buchanan: 616-695-9663

Missouri -- U.S. Safety Service Co. (eyewear, headgear, respirators)
Kansas City: 816-842-8500

New Jersey -- Belmar Safety Equipment, Inc. (complete line of equipment)
Barrington: 800-257-7744/609-547-8344

-- New Jersey Safety Equipment Co. (headgear, eyewear, respirators)
Union: 201-687-5292

New York -- Eastco Industrial Safety Corp. (complete line of equipment)
Flushing: 800-221-0224/212-762-2600

-- Scott Aviation (respirators)
Lancaster: 716-683-5100

-- Eastern Safety Equipment Co. (complete line of equipment)
Long Island City: 212-392-4100

-- Glendale Optical Co., Inc. (headgear, eyewear, respirators)
Woodbury: 516-921-5800

Ohio -- Gateway Safety Products Co. (headgear, eyewear, respirators)
Cleveland: 216-749-1100

Pennsylvania -- Pro-tech Apparel (complete line of equipment)
Glenolden: 215-522-0400

-- Mine Safety Appliances Co. (complete line of equipment)
Pittsburgh: 412-273-5000

Rhode Island -- Siebe Norton, Inc. (complete line of equipment)
Cranston: 401-943-4400

Wisconsin -- Lab Safety Supply Co. (eyewear, clothing, respirators)
Janesville: 800-356-0783/608-754-2345

EQUIPMENT USE

Pre-entry

- Initial respirator fit test should be performed at least qualitatively using saccharin nebulizer, or irritant smoke.

- Field check the respirator for proper fit by positive pressure method, after adjusting straps for a comfortable and close fit. Check exhalation valve seal by negative pressure method.

- Don shoes, respirator, and gloves before coveralls or whole body suits. A hardhat is worn over the coverall hood.

- Tape arm cuffs of coveralls to seal tightly against gloves, leaving tabs for easy removal. If rubber booties are worn, tape tightly to legs of coveralls.

Decontamination

- Remove gross fiber contamination from clothing before leaving the work area.

- Remove clothing and gloves by pulling inside out to trap external dust. Dispose of used clothing in plastic bags.

- A complete shower is recommended, including rinsing the respirator exterior before removal. Discard wetted filters in plastic bags.

- Rinse or wet-wipe hardhat and shoes

- Dry gear and body with disposable towels. Discard all wipes and towels in plastic bags.

- Clean rubber or plastic respirator facepiece with soap or mild detergent, and disinfectant.

SAFETY PRECAUTIONS

To minimize the exposure to airborne asbestos fibers, the following steps should be considered:

- Access site as little as is necessary to determine compliance.

- Follow site operator recommendations regarding clean room practice and changing areas on entry.

- Conduct sampling with minimum personnel present, during a period of inactivity, and after the HVAC system has been shut off.

- Do not disturb suspect materials any more than is necessary for sampling or to determine if friable.

- Follow site operator recommendations regarding clean room practice and changing rooms on exit.

To minimize the risk of physical injury the following precautions are suggested:

- Check with site operator prior to entry on condition of structure and extent of demolition or deterioration.

- Check on location of firefighting equipment, emergency showers, eyewash stations, and escape routes near work area.

- Check with site foreman on specific hazards in the work area.

- Minimize disassembly and handling structural materials to the extent necessary for sampling or inspection for friable asbestos material.

8. ASBESTOS NESHAP INSPECTIONS LEGAL PERSPECTIVES

The following legal guidelines advise inspectors on who is subject to the asbestos NESHAP, the authority for inspections, the enforcement options for violators, and the legal requirements for evidence. This material was obtained from EPA's strategy document and EPA Region II's enforcement experience (presented at EPA's Regional Workshop). Further legal questions should be addressed to Regional Counsels or to counsel for the state or local enforcement agency.

GENERAL

Owner or Operator

- As defined in the general provisions of 40 CFR Part 61, this term applies to both the demolition or renovation contractor, as the operator of the stationary source, and the facility owner or operator who purchases the services of (acquiring ownership or control over) the contractor. Hence, both parties are liable to the requirements of the NESHAP standard.

- Enforcement authorities may focus remedial action on whichever party has other, similar subject activities. Generally, that party is the demolition or renovation contractor.

- In some cases, ownership of property under state law may shift from the facility owner or operator to the demolition or renovation contractor.

Authority for Inspections

- Statutory authority for inspection is under Section 114 of the Clean Air Act.

- Allowed activities during inspection include sampling, photography, and visual observations: the inspector need not be a certified VE observer to judge whether there is an emission.

- If a facility denies access to an inspector, a warrant may be obtained to perform the inspection. In order to obtain a warrant, the agency should show either that the inspection is scheduled under a "neutral" inspection format, or that there is probable cause to suspect violations of the subject source. The agency must obtain the exact street address of the site and name of the owner in order to have a warrant issued.

- If an inspector discovers obvious violations of the asbestos NESHAP during an inspection, he or she is not empowered by EPA to order a work stoppage to curtail asbestos emissions. This order would be made, when necessary, at the level of a Division Director. Other orders may be feasible under the power of local health agencies.

Enforcement Options

- These options were summarized in the National Regulatory Strategy section. The enforcing agency has the option of pursuing informal action, administrative action, or judicial action to remedy ongoing violations and/or deter future violations. Informal or administrative actions are typically the easiest to perform, but only judicial actions allow EPA to assess and collect penalties.

- The source may also be subject to regulation under RCRA and/or CERCLA due to improper waste disposal, and air enforcement personnel should coordinate their actions with hazardous waste enforcement actions, if applicable.

- Other types of relief may be sought besides monetary compensation. For example, in United States versus Cleveland Wrecking Company, the Consent Decree included the following provisions:
    - If there is uncertainty as to whether FAM is present at a demolition or renovation site, the defendant will conduct sampling and analysis prior to commencing work activities which would disturb such material.
    - Supervisors knowledgeable about asbestos dangers and regulations are required at each worksite where FAM is present.
    - Inspection access is allowed to EPA representatives, for all of the defendant's worksites, for a period of 3 years.

TYPES OF EVIDENCE

Bulk Samples

- Sampling is critical because this is the only positive proof that materials contain asbestos.
- Inspectors must use chain-of-custody forms and quality assurance procedures to ensure that samples are traceable, to allow for use as evidence in court.
- The Clean Air Act does not specifically state whether samples should be split with the site owner or operator, although this is required under RCRA. Sample splitting is advised when the owner/operator requests it, in order to encourage good relations between the agency and source.
- Shelf Life is not an issue for asbestos bulk samples.

Admissions

- Admissions of illegal activity from owners or operators, or their representatives and employees, are vital to refuting arguments typically made by the defendants when subject to penalties. The following questions should be posed to site personnel during the initial inspection:

- Has the owner/operator ever engaged in removal of FAM prior to the current activity?
- Is the owner/operator aware of EPA regulations governing removal of FAM? Are wetting, bagging, etc., being performed?
- Did the owner/operator search the current work site for FAM prior to startup of work activity? How was the search conducted?
- Is there an economic incentive to avoid handling FAM as required by the regulation? What is the savings in money or time?
- Have areas containing FAM been vandalized? What damage was caused?
- Are current dust emissions (if seen) believed to contain asbestos?

Contractors may divulge such information willingly due to concern for their health or ignorance of the regulations. While an admission may not always be conclusive proof of a violation, it may be used to question the credibility of the defendant(s) if subsequent contradictory statements are made.

Photographs

- Used to help familiarize legal, nontechnical personnel with site activity.

- Date and describe photo subject on the back of each print. A log should be used or frame numbers recorded on the inspection form, particularly if different sites are photographed on the same roll of film. Traceability of each print may be questioned by defendants in order to establish doubt of credibility during legal proceedings.

Observations

- Record observations, relevant statements by site personnel, and visible emissions of dust to the atmosphere, on inspection forms. Each agency determines policy on providing copies of field data to the site owner or operator.

9. DEMOLITION AND RENOVATION

ONSITE INVESTIGATION

BACKGROUND

- Since the asbestos standard is based on no visible emissions or air-cleaning provision, EPA must perform onsite inspections to determine compliance.

- There are three principal reasons for performing demolition or renovation inspections:
    - To verify the quantity of friable asbestos if a notification is received reporting less than 80 linear meters or 15 square meters;
    - To determine if proper asbestos removal and disposal operations are employed after receiving notice of greater than the previously stated quantity of friable asbestos; and
    - To investigate demolition or renovation sites for which no notification was received.

- The following methods are used to identify facilities which do not notify EPA of subject activity:
    - Coordinate with state, county, and city departments of building, health (OSHA), and education;
    - Coordinate with industry personnel, such as the National Association of Demolition Contractors;

- Survey publications such as:

  National Wrecking and Salvage Journal

  Newspapers

  City magazines

- Coordinate with Federal agencies such as HUD (get names of contractors for their Community Development Block Grant Program) and OSHA;
- Some public utilities may report notices to terminate service, a tip-off to building vacancy and/or sale;
- Surveillance by EPA personnel.

- The inspection procedures discussed in this section are based primarily on a document entitled S.22 EPA Demolition and Renovation Inspection Procedures (October 1975), with some modifications based on more up-to-date experience.

INSPECTION EQUIPMENT CHECKLIST

- Protective Equipment--As previously emphasized.

- Employee Identification--i.e., proper credentials to prove authority for performing the inspection.

- Copy of Asbestos NESHAP Regulation--May help to resolve disagreements if the owner, operator, or contractor is not familiar with the regulation.

- Clipboard and Writing Implements--May want to carry pocket size if ladders must be climbed.

- Field Data Collection Checklist--Will be discussed later.

- Camera (With Flash)--Take photographs of each sample location and visible emission sources, if possible.

- Flashlight and Binoculars--Inspection of dark basements and closer look at inaccessible locations.

- Tape Measure--To estimate amounts of friable asbestos material and to locate sample sites, or may pace off distances as a rough estimate.

- Chain of Custody Forms and Labels--To properly distinguish each sample and to maintain a record of sample possession at all times.

- Sampling Equipment--In order to collect samples within the guidelines provided in the "Asbestos in Schools" program, the following items may be required (discussed later in the sampling section):
  - sample containers;
  - water spray bottle;
  - adhesive tape;
  - tools (pen knife, tweezers, etc.);

- drop cloth;
- handiwipes or paper towels; and
- plastic bags.

PRE-ENTRY OBSERVATIONS AND PREPARATIONS

- Survey Building/Structure from Outside--Look for visible emissions.
- Observe Waste Storage Area--To get an idea of the quantity and condition of the waste being created.
- Note Land Use Surrounding Site--May result in discovery of illegal disposal procedures.
- Sketch General Site Layout--To allow better familiarity with the area(s) to be inspected and to verify that all pertinent locations of the site are incorporated into the inspection.
- Check Protective Gear--It is highly recommended that all appropriate safety equipment is available. An inspector should not assume that the owner, operator, or contractor will supply the equipment.

SITE ENTRY

- Contact Proper Official--Generally the EPA inspector should ask for the owner/operator or site foreman (if demolition or renovation is in progress).

- Show Credentials--Explain the authority and purpose of the inspection.

- Address Liability Waiver--Signing or not signing of a liability waiver is an issue that should be addressed by the air pollution control agency prior to performing any inspections. A policy should be established and understood by all inspectors.

PRE-INSPECTION INTERVIEW

- Establish Identity of Responsible Individuals--Document the name and title of anyone who assists with the inspection. Also, identify the lines of authority to the owner of a facility if there are several management levels.

- Discuss Proposed Activity--Discuss any necessary information in the notification. Also, determine which emission standards the owner or operator elects in order to comply with the regulation.

- Discuss Logical Sequence for Inspecting Site--To promote overall efficiency of the inspection. May also discuss any safety requirements that may differ at areas of the site.

IDENTIFYING FRIABLE MATERIALS

- An inspector may find any one of the following combinations:
  - friable asbestos-containing material;
  - friable nonasbestos-containing material; and
  - nonfriable asbestos-containing material.

- It should be noted that asbestos-containing material that is nonfriable under normal conditions may become friable after fire or water damage. This emphasizes the importance of touching and sampling all material that appears friable.

Typical Friable Asbestos Materials

- Spray Applied Materials (fibrous, fluffy):
  - fireproofing;
  - decorative coatings; and
  - condensation control.

- Hand Trowelled Insulation (granular, cementitous):
  - acoustical insulation; and
  - thermal insulation (such as pipe lagging).

- Molded Insulation:
  - thermal insulation (such as pipe wraps).

Typical Nonfriable Asbestos Materials

- Asbestos/Cement Sheet (if broken this may develop friable edges).
- Vinyl asbestos floor tile.
- Roofing felts.
- Coatings and sealants (petroleum or resinous-based).
- Millboard.

Prevalent Uses

- Asbestos was used in buildings from the 1940s through the early 1970s.
- Some of the most common sites to look for asbestos:
    - heating, ventilation, and air conditioning systems; and
    - public meeting places; i.e., auditoriums, libraries, gymnasiums, etc.
- Friable asbestos material may be exposed or concealed.

DEMOLITION AND RENOVATION - EMISSION SOURCES

- During an inspection of ongoing asbestos removal at a demolition or renovation site the following operations and equipment are most likely to generate emissions:
  - material wetting;
  - material removal (stripping);
  - unit or section cutting or disjoining;
  - local exhaust ventilation/collection system;
  - waste handling and cleanup (dry vacuuming, wet vacuuming, wet mopping, sweeping, hand wiping, etc.); and
  - waste disposal.

EMISSION CONTROL OPTIONS

Work Practices

- During the removal of friable asbestos material prior to or during demolition/renovation activities, the owner may choose to follow the work practice (wetting and handling) requirements of the standard to control emissions.

Local Exhaust Evacuation Collection Systems

- An owner or operator may choose to utilize an evacuation system in conjunction with a control device (commonly a baghouse) to bypass wetting requirements when FAM is removed from facility components, either before or after their removal from the facility. The control system must, however, meet the no visible emission standard or comply with the aforementioned operating parameters.

NEGATIVE AIR SYSTEM

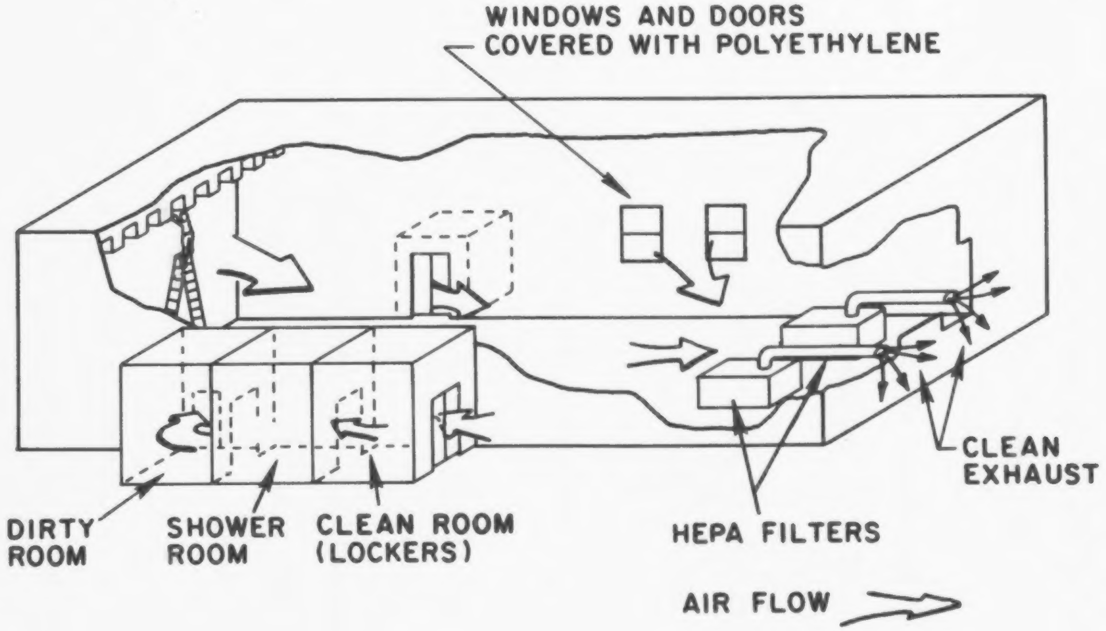
A negative pressure air system may be used with containment barriers to reduce the pressure in an enclosed work area, protecting against large-scale fiber release in the event of a breach in the containment. This system may also reduce worker exposure by increasing room air turnover rate. The system should be designed as follows:

- Windows and doors are sealed as usual;

- Locate exhaust units at a maximum distance from worker access openings, allowing makeup air to traverse the work area as much as possible;

- Size exhaust system to provide at least four air changes per hour;

"NEGATIVE AIR" SYSTEM


WINDOWS AND DOORS
COVERED WITH POLYETHYLENE
DIRTY ROOM
SHOWER ROOM
CLEAN ROOM (LOCKERS)
HEPA FILTERS
CLEAN EXHAUST
AIR FLOW

- Final filter must be a High Efficiency Particulate Air (HEPA) filter, rated for at least 99.97 percent efficiency with 0.03 μm DOP particles (Military Standard No. 282--Certification No. UL586). Prefilters (5 μm, 10 μm, etc.) should be used to extend HEPA filter life;

- Exhaust system should run 24 hrs/day until job is complete, and at least 4 hours after job completion; and

- Replace prefilters and/or HEPA filter if ΔP across exhaust system exceeds 1.0 in. H_2O.

See EPA-560/5-83-002 for additional guidance on negative air systems.

FIELD DATA COLLECTION CHECKLIST

- The 2-page demolition and renovation inspection checklist (attached) was developed by GCA based on improvement of the S.22 checklist originally developed by EPA in 1975.

- A blank copy is provided in Appendix B for your use if you choose to adopt the checklist.

DEMOLITION AND RENOVATION
FIELD DATA COLLECTION CHECKLIST

I. BACKGROUND INFORMATION

Site location (Address): 3100 Lake Street, Hartford, CT
Date and time of inspection: 10 June 1982, 10:00 a.m.
Weather conditions:
(ambient temperature) Partly sunny, 70's
Name of Inspector: P. Spawn

Site owner or operator:

Name: Liberty Mutual Co.
Address: 3120 Lake Street, Hartford, CT 22062
Phone: (203) 556-8223

Prime contractor or
subcontractor:

Name: A.M. Construction Co.
Address: 401 Main St., New Britain, CT 22041
Phone: (203) 496-2197

Site contact:

Name: Robert Piper
Affiliation: A.M. Construction Co.
Title: Site Foreman

Notification given: Yes X No____ If no, why____________________
For asbestos pipe lagging removal.

II. BUILDING/STRUCTURE INFORMATION

Use (office, retail, industry): Insurance Co. office
Type of Construction: Steel skeleton, reinforced concrete
Size (number floors, square footage): 10 stories; 50,000 sq ft.
Age - Constructed: 1930
Renovated: 1960
Surrounding neighborhood: Business district, similar office buildings
Operating schedule:
(if in use) 8:30-5:00, M-F

III. ACTIVITY DESCRIPTION

Demolition: __________, Renovation, ✓, Condemned __________

Present status: Renovation work is being performed over weekend of June 10-11. Presently stripping 400 ft (= 122 m) of asbestos-containing pipe lagging from steam pipes on 7th floor. Samples of lagging, taken by A.M Construction prior to starting work, reveal asbestos content of 30 weight % (chrysotile).

If phased renovation record schedule: Renovation activities planned for next 6 months. Now renovating 7th floor cafeteria. Plan to remodel 5th floor library next month.

If activity has not begun, obtain work schedule for asbestos removal (return at that time). Library renovation scheduled to start 13 July 1982, involves refurbishing walls, ceiling, floor.

IV. LOCATION OF FRIABLE MATERIAL

Verified FAM on 7th floor.

(Document with photographs) Observed sprayed-on material on 5th floor ceiling. Building Superintendent said material was applied in 1960 for decoration & sound proofing.

Record location in building (Blueprints or sketch) - Recorded location on B.P. supplied by Bob Piper.

Is suspect material exposed or concealed?

Is suspect material friable? Yes, verified by touching.

Estimate amount: more than 260 ft
more than 160 ft^2 estimate 625 Sq. ft.

Sample as necessary. 3 samples obtained
Sample I.D.'s: #0601, #3914, #2613 (see B.P. locations)

V. REMOVAL PROCEDURES IMPLEMENTED

(Record violations if observed and take samples)

Observed during pipe lagging removal:

Wetting and stripping - Pipes sprayed w/ amended water, then cloth tape covering insulation is punctured to allow water penetration.

Unit or section removal - Not performed.

Use of surfactant - Yes, 50/50 polyoxyethylene ether/ester, 5% by volume in water. Premix in holding tank and pumped to spray nozzle.

Water availability - No availability problem; from kitchen taps.

Local exhaust ventilation/ collection system (no visible emissions or air-cleaning) - None other than use of portable dry vacuum with HEPA filter for housekeeping.

Use of barriers - Walls & floor sealed with 6-mil polyethylene & duct tape

Other removal technique or procedures - All moveable objects were removed prior to renovation. Nonmoveable objects were covered w/ polyethylene.

VI. WASTE HANDLING

(Record violations if observed and take samples)

Wetting waste: Yes ✓ No____

Record waste transport throughout site (including containers) All wetted pipe lagging is shovelled into 40-gallon plastic-lined cardboard barrels. When full, the plastic liner is tied off and a lid is secured by ring-clamp. Cleanup waste will be handled in the same manner. Bob Piper reports all asbestos waste will be taken by A.M. Construction to the City of Hartford municipal landfill.

POST INSPECTION INTERVIEW

- Discuss Findings with Responsible Individuals--i.e., compliance status, sampling activity, etc.

- Present Recommendations--which might include:
    - improve waste handling methods;
    - use a surfactant;
    - more thorough job of stripping; and
    - keep waste FAM wet at all times prior to disposal.

- Delineate Followup Activities--such as additional sampling or analysis activity, or additional inspections to observe operations.

SITE EXIT OBSERVATIONS

- Resurvey Site from Outside--the location/arrangement of certain aspects of the site may be more clear than was noted during the presurvey.

- Observe Waste Storage Area--if it was not evident prior to entering.

- Note Changes Since Site Entry--sometimes good work practices observed during the formal inspection will not continue after departure of the EPA inspector.

INSPECTION OF LANDFILL OR WASTE DISPOSAL SITE

- To complete an inspection of a demolition or renovation site the EPA inspector must also verify that the waste FAM is properly disposed.

- The generator of FAM is responsible for any waste handling violations even at the waste disposal site.

Procedure

- Upon site entry the site operator should be contacted to determine if the landfill is permitted to operate and determine the expiration date of permit.

- Determine what requirements were met for the site operator to obtain a permit and what regulatory agency permitted the site.

- Inspect site to determine if there are any violations of the regulations (discussed earlier); i.e.,
  - no visible emission; or
  - cover with 6 inches of fill within 24 hours; or
  - cover with dust suppression agent within 24 hours.

DISPOSAL SITE FIELD DATA COLLECTION CHECKLIST

- The 4-page waste disposal site inspection checklist (attached) was developed by GCA based on field inspection experience.

- A blank copy is provided in Appendix B for your use if you choose to adopt the checklist.

LANDFILL FIELD DATA COLLECTION CHECKLIST

SITE NAME: ABC Landfill

Address: 123 Crestview Drive
Middletown, N.Y. 14030

Date and time: June 5, 1984 1 30 pm

Weather Conditions: Partly sunny, light wind from the northeast

Investigator: Barnaby Jones

Site Contact: Name: Joe Dirtman

Title: Landfill President

Affiliation: Privately owned

Phone: (716) 345-5433

Confidentiality Claim Asserted: Yes X No ____

Permission to take photographs on site: Yes X No ____

BACKGROUND INFORMATION:

Operating Schedule:

hr/d 7½ d/wk 5 wk/yr 52 d/yr 260

Scheduled shutdowns: None

Permitted Site:

Yes X No ____, if yes then permit number and effective dates ____

No. 2630 Effective dates November 4, 1980 through Nov 4, 1984

Permitted by: New York Department of Environmental Conservation

Requirements to obtain permit(s):

6" daily cover, fenced

2' final cover

SITE DESCRIPTION:

Years of operation 15, expected life span 25

Surrounding land use:*
(*Note North, South, East, and West Orientations)

Light residential and access road to the south, agricultural to the east and north, forested along the western border

Type of landfill (area, slope/ramp, trench, pit/quarry) - Trench

Run-on/Run-off control measures - Ditch along eastern and northern (uphill) borders draining to on-site lagoon. Berms on southern and western borders with underground drainage to lagoon. Bales of hay surrounding active area.

Wind erosion control measures - Trees along site periphery, grass planted on the areas which have attained final elevation.

SITE CONTACT INTERVIEW - ASBESTOS WASTE HANDLING:

When was asbestos-containing waste last received? Two days prior to site visit (6/3/84)

Type of waste and generator? Demolition debris (insulation) from Niagra Falls Air Force Base

How was it deposited (e.g. manually off-loaded, dumped semi-automatically)? Manually off-loaded

How was it containerized? Two 3-mil plastic bags inside 30 gallon cardboard containers.

Where was it actually deposited? (note on sketch) In the industrial waste trench.

Over the previous two months, how many asbestos-containing waste shipments have been received? Six.

Where has the material been deposited? In the current industrial waste trench.

Site records include exact location of each deposit. Site divided into a 200 x 200 grid with 10 foot elevation increments.

VISUAL OBSERVATIONS:

Waste sufficiently covered? (depth of cover material) Waste appears to be covered daily. Reportedly 6" of cover is used although the debris is visible in previously covered areas

Type of cover material? Soil obtained on site.

Is a dust suppressant agent used? No Type?

Signs or fences present? Entire site is fenced. Six foot chain link fence and locking gate along access road; barbed wire on remaining borders. Signs at gate indicating site name and operating schedule

Accessible to public (natural barriers)?
Gate on sole access road is locked during closed hours.

Special handling procedures for asbestos?
Site must be notified of delivery 24 hours in advance. Shipmust must arrive before 3 00 pm. Waste must be wet to the touch and is unloaded by hand in a prepared cavity in previously dumped industrial waste.

Any inactive (closed) portions?
Yes

Is any asbestos-containing waste exposed?
No

If the material is exposed---

Was it deposited with the past 24 hours?

Is it sealed in leak-tight containers and are the containers intact?

Are the containers properly labeled?

Are visible emissions present?

SAMPLING (repeat for each sample taken): None taken.

Sample identification number(s) -

Sample location(s) -

Visible emissions present? No
(*Note: take photographs)

FOR INACTIVE SITES OR PORTIONS THEREOF:

Are visible emissions present? No

Are warning signs posted? No

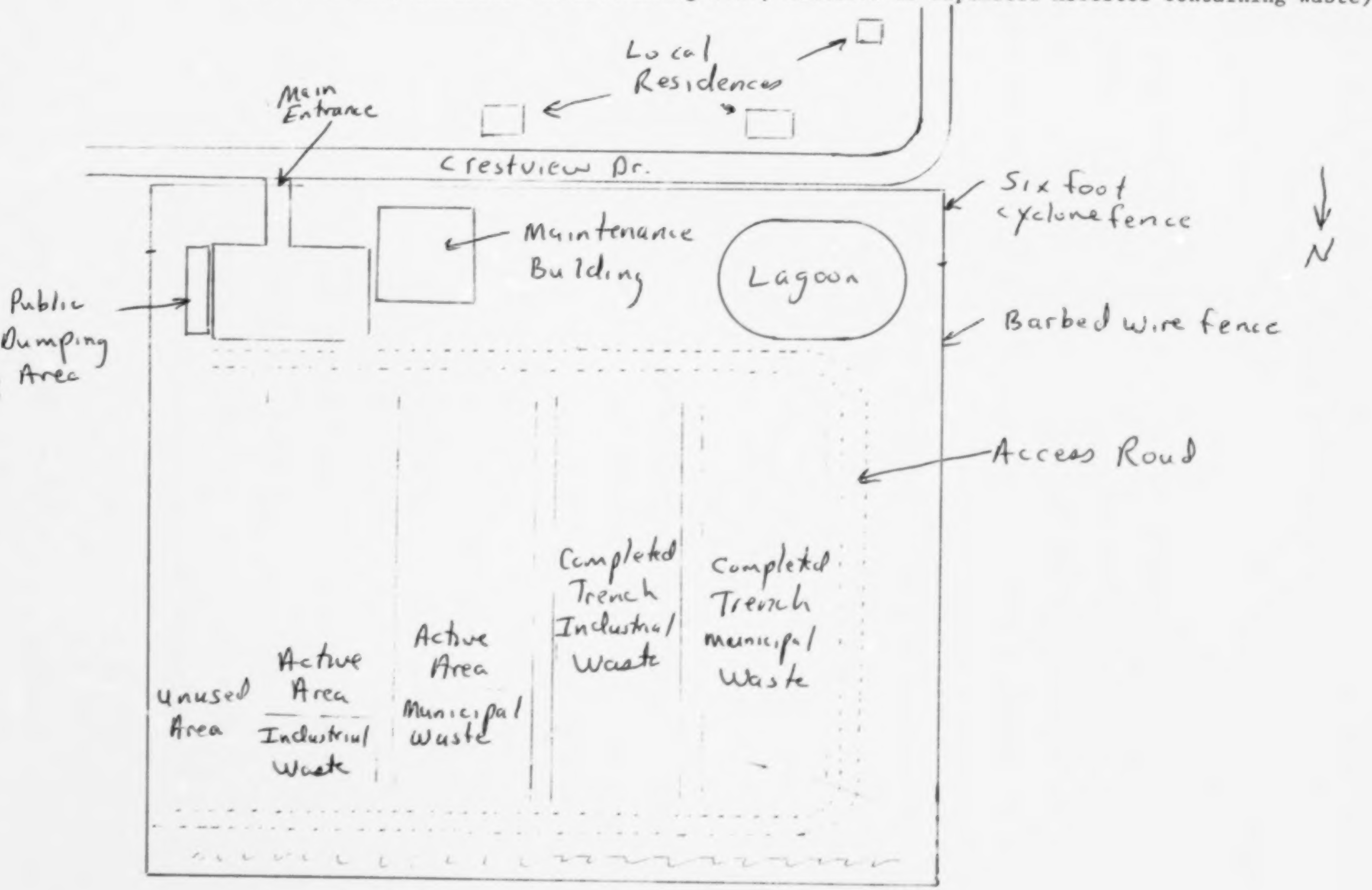
Does a fence or natural barrier surround the site? or Yes

Has the asbestos-containing waste been covered by six inches of material and does a vegetative cover exist? or Yes

Has the asbestos-containing waste been covered by two feet of compacted non-asbestos containing material? Yes

SKETCH OF DISPOSAL SITE (PLAN VIEW)

(Include Site Entrance and Boundaries, Roadways, Active Cells, Closed Cells, Borrow Areas, Direction of Prevailing Wind, Location of Deposited Asbestos-Containing Waste)


Local Residences
Main Entrance
Crestview Dr.
Six foot cyclone fence
N
Maintenance Building
Lagoon
Public Dumping Area
Barbed wire fence
Access Road
Unused Area
Active Area
Industrial Waste
Active Area
Municipal Waste
Completed Trench Industrial Waste
Completed Trench Municipal Waste

10. ASBESTOS BULK SAMPLING

PURPOSE

- The purpose of bulk sampling is to determine if friable material contains regulated amounts of asbestos (>1 percent by weight) and, therefore, whether the owner or operator is subject to the Asbestos NESHAP, and which friable materials must be handled accordingly.

- There will be no discussion of ambient level sampling or analysis since there is no regulation under the EPA NESHAPs program.

PROTECTIVE EQUIPMENT

Since there are no specific requirements for protective equipment under NESHAPs, it is recommended that the OSHA safety requirements be followed as previously discussed in Sections 6 and 7. The following is a brief summary:

- Respirator--asbestos-rated filter mask or cartridge type respirator, or better if the situation warrants it.

- Clothing--disposable Tyvek® 1-piece suit with booties and hood, or equivalent, and PVC gloves are recommended if a large number of samples are taken, or if materials surrounding sample site must be disassembled for access (e.g., ceiling tiles).

- Hardhat, safety glasses, safety shoes, and ear protection are recommended, and may be required by site owner or contractor.

SAMPLING EQUIPMENT

Some items that may be useful obtaining bulk samples from a demolition or renovation site include the following:

- Sample Containers--Any dry, clean container such as a 35mm film canister or plastic bag.

- Water Spray Bottle--For wetting a surface prior to sampling to prevent generation of dust.

- Adhesive Tape--To seal the sample container and repair a sampled area, such as a pipe lagging, if necessary.

- Tools, Drop Cloth--Tools such as metal tweezers, a pen knife, or scissors may be useful. A drop cloth would be used to avoid contamination of an area if necessary.

- Handiwipes or Paper Towels--To clean up a sampled area and tools following sampling to prevent contamination of subsequent samples.

- Plastic Bags--To place waste material, if any, generated during the sampling exercise. The bags should be properly sealed and disposed of as asbestos-containing material.

SITE SELECTION

The NESHAPs regulation does not make any specific recommendations for bulk sample site selections, therefore, we recommend that the guidelines developed by TSCA for their "Asbestos in Schools" program will be considered. The following lists the TSCA guidelines:

Establish Sampling Areas

- Each area should consist of homogenous friable material applied in the same time period.

- Use building records, history of renovations or additions, and visual inspection to determine homogeneity.

Identify Sites Within Areas

- Identify at least 3 sample sites per sampling area.
  - for large areal applications, use random number method contained in EPA-560/13-80-017 to assure random site selection,
  - for line applications (i.e., pipes, ducts, I-beams) GCA recommends a modified random number method to assure random site selection.

COLLECTION METHODS

Again, as recommended by the TSCA rule, the following guidance is suggested for collection of samples.

Prepare Sampling Area

- Spread a dropcloth under the sample activity area, if necessary.
- Wet sample area with a light water mist to reduce fiber release.

Collect Sample (TSCA Recommendations)

- Gently twist the open end of the sampling container into the material. A core of the material should fall into the container. Or, a utensil can be used to scrap a sample into a container. A microscopist only needs about half of a full 35mm film canister to perform analysis by PLM. Be sure to penetrate any paint or protective coating and all the layers of the material. If the sampling container or utensil cannot penetrate the material, consider whether the material is really friable or not.
- Tightly close the sampling container; wipe its exterior with a damp cloth to remove any material which may have adhered to it during sampling.

- Tape the sampling container shut to prevent the accidental opening of the container during shipment or handling.

- Record the unique sample I.D. number chosen at random on a label and tape the label to the corresponding sampling container.

CLEANUP PROCEDURES

- Photograph sample site, recording time, date, and exact location.

- Clean sample tools, if used, and discard dropcloth and cleanup rags in plastic bags sealed with tape. When final sample is taken, discard protective clothing in plastic bags sealed with tape.

- If necessary, repair sample site with tape and plastic to minimize fiber release prior to the demolition or renovation activity.

QUALITY ASSURANCE

The recommendations developed by TSCA for the "Asbestos in Schools" program relative to sampling of asbestos materials consists of the following:

Sample I.D. Numbers

Assign nonsystematic unique numbers for each sample and split sample to prevent bias during analysis.

Chain of Custody Forms

In order to assure that the samples are properly identified and tracked throughout the analysis, the use of a "Chain of Custody Record" has been recommended by EPA (attached).

Split Samples

- Establish a representative number of split samples:
  - based on guidance in EPA-560/13-80-017,
  - QA program may encompass several job sites.

- Collect consistent split samples:
  - obtain identical amounts of homogenous material for each split sample pair.

- Integrate split sample analysis with QA program:
  - determine laboratory acceptability based on guidance in EPA-560/13-80-017,
  - resolve split sample disagreements,
  - reanalyze samples, if necessary.

CHAIN OF CUSTODY RECORD

Project Code	**Project Name**
SAMPLERS (Signature)	

I.D. NO.	DATE	TIME	LOCATION										REMARKS

Relinquished by (Signature)	**Date/Time**	**Received by (Signature)**	**Relinquished by (Signature)**	**Date/Time**	**Received by (Signature)**
Relinquished by (Signature)	**Date/Time**	**Received by (Signature)**	**Relinquished by (Signature)**	**Date/Time**	**Received by (Signature)**
Relinquished by (Signature)	**Date/Time**	**Received for Laboratory by (Signature)**	**Date/Time**	**Remarks**	

11. LABORATORY ANALYSIS

INTRODUCTION

- The analysis of a bulk sample is intended to detect the quantity, as well as the specific type of asbestos for each sampling area.

- Following the collection of bulk samples the EPA inspector or other EPA authority is responsible for the following steps:
  - selection of analysis method,
  - selection of qualified laboratory,
  - statistical interpretation of results.

ANALYSIS METHODS

The NESHAPs program has no specific guidelines on analysis methods for characterizing asbestos in bulk samples. Therefore, the guidelines under the TSCA "Asbestos In Schools" program published in 40 CFR Part 763 Appendix A are used.

Polarized-Light Microscopy (PLM)

- Based on optical crystallographic properties, the PLM method must be performed by a microscopist with formal training in Optical Mineralogy.

- PLM gives a qualitative differentiation between asbestos and nonasbestos fibers along with a quantitative estimate of percent asbestos.

- Fiber identification requires determination of the following optical properties:
  - morphology;
  - color and pleochroism;
  - refractive indices;
  - birefringence;
  - extinction characteristics; and
  - sign of elongation.

- PLM specifications:
  - detection limit = <1%,
  - resolution limit = 1 μm length (can identify fibers as small as a 0.1 μm diameter if length exceeds 1 μm),
  - average 1980 cost = $43 per sample.

X-ray Diffraction (XRD)

- TSCA recommends XRD to confirm the identity of asbestos in samples analyzed by PLM.

- XRD is based on crystal diffraction of x-rays. It is subject to interferences from nonasbestos minerals.

- XRD specifications:
  - detection limit: undetermined,
  - resolution limit: undetermined,
  - average 1980 cost = $70 per sample.

Electron Microscope (EM) - Not approved for TSCA rule.

- Two methods:
  - transmission electron microscopy (TEM),
  - scanning electron microscopy (SEM).

- SEM and TEM give better resolution than PLM.

- TEM resolution is better than SEM, but also more costly.

- EM average cost is $188 per sample (1980).

Other Techniques

- Infrared Absorption (IR) and Differential Thermal Analysis (DTA) are only useful for high asbestos concentrations.

- Phase Contrast is only used for analysis of air filter samples.

QA AND REPORTING

EPA QA Program

- Laboratory performance based on correct identification of positive (asbestos) and negative (nonasbestos) samples.
- Four samples to each accepting laboratory contain different types of asbestos and nonasbestos (minerals, fiberglass or mineral wool, natural and synthetic fibers) material.
- Sample rounds available about twice yearly.
- Updated list of participating labs available by calling RTI at 1-800-334-8571, extension 6741.

New Laboratory Evaluation

- TSCA has presented recommendations for evaluating performance of new laboratories (EPA 560/13-80-017 Appendix B) which are based on split sample evaluations and number of disagreements.
- GCA recommends contracting for complete characterization of mineral matter; this requires an experienced microscopist.

Analysis Report Contents

- Sample I.D. number.
- Analytical method: PLM, and XRD if applicable.
- Sample appearance: homogeneity, identification of subsamples and number of slides.
- Sample pretreatment (grind, wash and dry, homogenize, or other).
- Amount examined.
- Types of asbestos present, relative percentage of each, and total percent asbestos in sample.
- Types of nonasbestos fibrous material, relative percentage of each, and total percent of nonasbestos fibrous material in sample.
- Quantitation method: point count or equivalent estimation.
- Quality control: number of slides per sample and number of splits per set, QA/QC for equivalent estimation method (if used).

Statistical Analysis of Results (EPA-560/13-80-017)

- Calculate confidence interval for the average percent asbestos in a sampling area.

- Accounts for range of results due to:
    - analytical techniques;
    - heterogenous materials; and
    - sampling errors.

12. ASBESTOS INSPECTION EXPERIENCE

Notes

Notes

Notes

ASBESTOS REFERENCES

U.S. Environmental Protection Agency, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings. Office of Pesticides and Toxic Substances, Washington, D.C. EPA-560/5-83-002, March 1983.

U.S. Department of Commerce, National Bureau of Standards. Guidelines for Assessment and Abatement of Asbestos-Containing Materials in Buildings. Center for Building Technology, Washington, D.C. NBSIR 83-2688, May 1983.

U.S. Environmental Protection Agency, Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 1 and 2. Office of Toxic Substances, Washington, D.C. EPA-450/2-78-014, March 1979.

U.S. Department of Labor, Occupational Safety and Health Administration. Occupational Exposure to Asbestos: Proposed Rule and Notice of Hearing. Federal Register Vol. 49, No. 70, Tuesday, April 10, 1984.

U.S. Environmental Protection Agency, Asbestos-Containing Materials in School Buildings, Guidance for Asbestos Analytical Programs. Draft Report. EPA-560/13-80-017, June 1980.

U.S. Environmental Protection Agency, Region VII. Asbestos Exposure Assessment in Buildings... Inspection Manual. March 1980.

The Foundation of the Wall and Ceiling Industry, Washington, D.C. Guide Specifications for the Abatement of Asbestos Release from Spray- or Trowel-Applied Materials in Buildings and Other Structures. December 1981.

U.S. Environmental Protection Agency, Interim Method for the Determination of Asbestiform Minerals in Bulk Insulation Samples. June 1980.

U.S. Environmental Protection Agency, Evaluation of Encapsulants for Sprayed-On Asbestos-Containing Materials in Buildings. Office of Research and Development. Cincinnati, OH, 1981.

U.S. Environmental Protection Agency, Support Document/Asbestos-Containing Materials in Schools/Health Effects and Magnitude of Exposure. Office of Pesticides and Toxic Substances, Washington, D.C. EPA-560/12-80-003, October 1980.

U.S. Environmental Protection Agency, Support Document/Asbestos-Containing Materials in Schools/Economic Impact Analysis of Identification and Notification. Office of Pesticides and Toxic Substances, Washington, D.C. EPA-560/12-80-004, November 1980.

National Bureau of Standards, Proceedings of the Workshop on Asbestos: Definitions and Measurement Methods, held at NBS, Gaithersburg, MD, 18-20 July 1977. NBS Special Publication 506, Issued November 1978.

U.S. General Accounting Office, Asbestos In Schools: A Dilemma. GAO/CED-82-114, August 31, 1982.

S.22 EPA Demolition and Renovation Inspection Procedures Prepared by Kenneth B. Malmberg (EPA), SSCD, Washington, D.C. October 1975.

APPENDIX A

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

SUBPART M - ASBESTOS

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL 2515-8]

National Emission Standards for Hazardous Air Pollutants; Amendments to Asbestos Standard

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Amendments to the national emission standard for asbestos were proposed in the **Federal Register** on July 13, 1983 (48 FR 32126). This action promulgates the amendments under Section 112 of the Clean Air Act as amended in 1977. The intended effect of the amendments is to reinstate work practice and equipment provisions of the standard that were held not to be emission standards by the U.S. Supreme Court in 1978. They also reword and rearrange the standard for clarity.

EFFECTIVE DATE: April 5, 1984. Under Section 307(b)(1) of the Clean Air Act, judicial review of these amendments is available only by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under Section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Docket.* A docket, number A-83-02, containing information considered by EPA in development of the promulgated amendments, is available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (LE-131), West Tower Lobby, Gallery 1, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Robert L. Ajax, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-5578.

SUPPLEMENTARY INFORMATION:

The Amendments

The amendments reinstate portions of the asbestos NESHAP that were equipment or work practice requirements. The Supreme Court held in *Adamo Wrecking Company* v. *United States*, 434 U.S. 275 (1978) that work practice requirements of the NESHAP were not authorized by the 1970 Amendments to the Clean Air Act under which they were originally promulgated. The 1977 Amendments to the Act specifically authorize such requirements. On June 19, 1978 (43 FR 26372), EPA repromulgated many of the requirements under authority of the 1977 Amendments, and today's action repromulgates the following remaining requirements in a new Subpart M of 40 CFR Part 61.

1. Section 61.143 reinstates a prohibition of surfacing roadways with asbestos tailings or asbestos containing waste.

2. Sections 61.145(c) and 61.147(g) reinstate a partial exemption for demolition operations for structurally unsound buildings.

3. Section 61.147(e) reinstates the requirement that asbestos removed during demolition or renovation be kept wet until it is collected for disposal. It also requires that the asbestos not be dropped or thrown to the ground or a lower floor and that asbestos removed more than 50 feet above ground level be transported to the ground in dust-tight chutes or containers (unless it is removed in units or sections).

4. Section 61.147(f) reinstates alternative work practices that may be used for removal of asbestos prior to demolition when there are freezing temperature conditions at the point where the asbestos is being wetted.

5. Section 61.150 reinstates the prohibition of installation of certain molded or wet-applied insulating materials that contain commercial asbestos.

6. Sections 61.151(a) and 61.152(a) simply refer to the requirements of Section 61.156.

7. Sections 61.151 (b) and (c); 61.152(b) (1), (2), and (3); 61.153(a) (2), (3), and (4); 61.154; and 61.156 (c) and (d) reinstate alternative work practices or equipment that may be used in lieu of complying with a no visible emission limit.

8. Sections 61.153(b) and 61.156(b) reinstate the requirement for warning signs and fencing around asbestos waste disposal sites if (1) the owner or operator chooses to comply with a no visible emission limit rather than follow specified work practices, and (2) there is no natural barrier to deter access by the general public.

In addition to these requirements, today's action clarifies the asbestos NESHAP by rewording and rearranging it into a new Subpart M of 40 CFR Part 61.

Public Participation

The amendments were proposed in the **Federal Register** on July 13, 1983 (48 FR 32126). To provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed amendments, a public hearing was held on August 9, 1983, at Research Triangle Park, North Carolina. The hearing was open to the public and each attendee was given an opportunity to comment on the proposed amendments. The public comment period was from July 13, 1983, to September 9, 1983.

Fifteen comment letters were received and two interested parties testified at the public hearing concerning issues relative to the proposed amendments. The comments have been carefully considered and, where determined to be appropriate by the Administrator, changes have been made to the proposed amendments.

Summary of Comments and Changes to the Proposed Amendments

Comments on the proposed amendments were received from industry, Federal agencies, State and local air pollution control agencies, and private citizens. The following summary of comments and responses serves as the basis for the revisions that have been made to the proposed amendments. Most of the letters contained multiple comments, some of which were outside the scope of this rulemaking. Those comments have been summarized in Item No. IV-B-1 of Docket No. A-83-02. They are being evaluated in conjunction with the comprehensive review of the asbestos NESHAP that is currently underway.

Most of the remaining comments pertain to the effect that rewording and rearranging the proposed amendments had on the original meaning and intent of the asbestos NESHAP. Some of them also pertain to the reasonableness of those requirements being repromulgated (see list in the section entitled "The Amendments"). The comments are discussed below and are organized according to the sections of the proposed amendments to which they pertain.

Section 61.141

One commenter noted that the proposed definition of "demolition" deletes the previous reference to "any related removing or stripping of friable asbestos materials" and recommended restoring the definition to the old wording. The commenter believes that the new wording may be interpreted to not include removing and stripping.

EPA intended that the proposed definition of "demolition" describe the activities that occur when a facility is demolished as distinguished from "renovation," as the terms are used in the regulation. The primary distinguishing activity is that load-supporting structural members are wrecked or taken out in a demolition operation but not in a renovation. Asbestos stripping or removal may occur in either but should not be used to define the primary activity of demolition or renovation. Section 61.145 clearly states that when demolition or renovation operations meet certain specified criteria regarding asbestos materials in the facility, they are subject to the regulation. Also, § 61.147 clearly specifies that stripping or removal of asbestos materials during demolition or renovation must be carried out in accordance with the standard. It is not necessary to repeat these provisions in the definition of "demolition."

One commenter noted that the proposed definition of renovation would apply only to removal of asbestos and not to stripping and recommended that the new definition be as comprehensive as the old one.

EPA did not intend to omit the word "stripping" from the definition of "renovation" at the time of proposal. However, EPA has reevaluated the definition to determine the wording that would be the most useful and informative for the regulation. As discussed in the response to the previous comment about the definition of "demolition," the terms should be defined to describe the type of activity that is being carried out at a facility, regardless of the presence or absence of asbestos material, and the definition of "renovation" has been revised accordingly.

One commenter recommended restoring the phrase "based on operating experience" to the definition of "planned renovation" to clarify the basis for predicting future renovations involving asbestos removal. The phrase was in the old definition. The commenter's recommendation has been incorporated into the amendments.

One commenter requested clarification of the definition of "emergency renovation operation." He asked whether it would include malfunctions, such as leaking valves, that require the removal of asbestos-containing insulation. Although these malfunctions are expected to occur, they are not planned or scheduled.

EPA considers the type of occurrence described by the commenter to be part of a planned renovation operation and not an emergency renovation operation. The commenter indicated that although the situations are not planned or scheduled, they are expected to occur. They would, therefore, fit the definition of "planned renovation operation" in § 61.141 that says, "Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time."

Section 61.145

One commenter noted that the word "or" between "operators" and "demolition" in § 61.145(e) should be changed to "of." He indicated that the proper wording would show what he believed to be the Agency's intent to limit applicability of the regulations to only "wreckers and renovators" and not to include facility owners and operators.

The commenter is correct that the word "or" should be changed to "of," and this correction has been made. However, the commenter's interpretation that the regulations apply to only "wreckers and renovators" and not to facility owners and operators is incorrect. The general provisions of 40 CFR Part 61 define "owner or operator" as any person who owns, leases, operates, controls, or supervises a stationary source (40 CFR 61.02(1)). The stationary source in this case is the demolition or renovation operation. The demolition or renovation contractor would clearly be considered an owner or operator by "operating" the stationary source. The facility owner or operator, by purchasing the services of the demolition or renovation contractor, acquires ownership and control of the operation and would, therefore, be the "owner" for purposes of this standard. Therefore, the standard applies to both the contractor and the facility owner or operator.

Sections 61.146 and 61.147

One commenter believes that the wording in §§ 61.146 and 61.147 is vague with respect to identifying who is subject to the requirements, unlike the wording in §§ 61.142, 61.143, 61.144, 61.148, and 61.149, which is restrictive in describing the regulated party.

EPA believes that the applicability of §§ 61.146 and 61.147 as described in § 61.145 adequately identifies those subject to the requirements of the demolition and renovation standard.

One commenter questioned the intent of § 61.147(e)(1). The regulation requires that asbestos materials be adequately wetted to ensure that they remain wet during all remaining stages of demolition or renovation and related handling operations. The commenter asked whether this requirement should be interpreted to mean that the asbestos has to stay wet even after it is properly bagged and sealed.

The intent of the requirement to keep friable asbestos materials wet during all remaining stages of demolition was to ensure that the asbestos materials that have been removed or stripped but not yet disposed of are not allowed to dry out so that asbestos fibers become airborne. If they are properly sealed in leak-tight containers or bags while wet, they should not dry out before they can be transferred to an acceptable disposal site. In any case, after they are bagged, the waste disposal requirements in § 61.152 (and not § 61.147) would apply to the handling of the asbestos materials. To clarify the meaning of this portion of the standard, the wording of § 61.147(e)(1) has been revised to indicate that the asbestos materials must be kept wet until they are collected for disposal in accordance with § 61.152. They would be considered "collected" when they are properly bagged.

Section 61.150

One commenter asked for clarification of the intent of § 61.150, which prohibits the installation of certain asbestos-containing insulating materials. It was not clear to him whether the prohibition affects manufacturing operations that use parts containing asbestos such as grommets, gaskets, string, etc. in their products.

The preamble of the **Federal Register** notice that contained the original standard for insulating materials (39 FR 38064; October 25, 1974) discusses the intended applicability of the prohibition. It is clear fom that discussion that the prohibition was intended to apply to field installation of such insulating products as molded, asbestos-reinforced blocks, sheets, and semicircular sections for pipe insulation; and powdered asbestos cement products mixed into a slurry and used to insulate irregular shapes. These installations would have been associated with construction activities on buildings and other facilities. Therefore, the prohibition would not affect manufacturing operations that use asbestos-containing parts in their products. The regulation has been reworded to reflect EPA's intended effect of the prohibition.

Section 61.154

One commenter pointed out that the units in § 61.154(a)(1)(iii) do not properly relate square meters to square yards, resulting in a lowering of the weight of the filter by about 20 percent from the old requirement; i.e., 14 oz./sq. yd. is not equal to 14 oz./sq. meter. In addition, he pointed out that the use of 1/16 inch is not in keeping with EPA's metric program. The errors noted by the commenter have been corrected in the final rule.

Section 61.155

One commenter requested clarification of the Agency's intent in § 61.155, which requires that existing sources covered by the asbestos NESHAP provide to the Agency within 90 days information regarding their asbestos emission control methods. The commenter asked if renotification and resubmission would be required if they had already complied with these same requirements in the old designation § 61.24.

EPA does not intend that existing sources of asbestos emissions resubmit notifications that were originally required by the standard promulgated in 1973. The wording of § 61.155 has been revised to accurately reflect EPA's intent.

Miscellaneous

One commenter expressed the opinion that the proposed amendments do not sufficiently correct the weakness of the NESHAP regulations and that they represent a "crude slap in the face to asbestos victims and will create health hazards of such proportions that new generations of asbestos victims will be guaranteed." He supported his opinion with the following arguments:

1. The no visible emission limit is not adequate for regulating airborne asbestos because it does not take into account the substantial asbestos disease risk when emissions that are not visible are present.
2. The proposed reinstatement of the exemption from certain wetting requirements during demolition operations in freezing temperatures should not be allowed. Weather conditions that do not allow wetting should also not allow asbestos to be removed. Wetting requirements are important because they can reduce dust levels by a power of 10.
3. Allowing exceptions when local entities pronounce buildings structurally unsound is tantamount to opening a way for widespread violation of health practices.
4. Under no circumstances should visible emissions be allowed.
5. All references to the economic impact should be dropped. EPA should concern itself with the economic impact on society, which ends up paying for disease victims produced by inadequate work regulations.

The first four of the commenter's statements concern issues that are currently being investigated in the review of the asbestos NESHAP: the no visible emission limit, the exemption from wetting requirements during freezing weather, and the exemption for structurally unsound buildings. EPA will evaluate the effect of these provisions and determine whether they need to be revised. That evaluation is beyond the scope of today's rulemaking, however. The amendments are intended to reinstate the provisions of the original NESHAP and not to include new provisions or delete any of the original ones. Therefore, no changes are being made to these portions of the proposed amendments.

In response to the commenter's suggestion to drop all references to the economic impact of the proposed amendments, the Agency believes that economic impact on the regulated entities is one of many factors that should be considered when setting standards under Section 112 of the Clean Air Act. Any adverse economic impact on society resulting from inadequate regulations for a hazardous air pollutant would be of concern to EPA as it would be a consequence of adverse public health effects. The current review of the NESHAP will include an evaluation of this aspect of regulating asbestos to determine if more stringent requirements are needed.

One commenter said that the requirement in § 61.146(c)(3) to explain the techniques of estimation of the amount of asbestos for certain demolition jobs seems to be a new requirement because he could not locate it in the old regulation. The requirement was in § 61.22(d)(1)(ii) of the old regulation.

One commenter said that States that are enforcing the asbestos NESHAP sometimes have a different interpretation of regulations than EPA and suggested that EPA provide clarification of intent for the States.

Under the Clean Air Act, States are free to require more stringent asbestos emission control measures than those in the asbestos NESHAP. EPA does, however, provide EPA enforcement determinations to States that have been delegated authority to enforce the NESHAP. These determinations include EPA's interpretations of portions of the regulation as questions arise concerning them, and they are very useful in ensuring consistency of enforcement among the States and EPA Regional Offices.

One commenter said that there is a statement in the proposal preamble that is not true. It says, "Demolition and renovation contractors typically transport the asbestos they remove from a facility to a waste disposal site on a daily basis." The commenter stated that the economics of doing this would be astronomical. For example, the cost of hauling a small number of bags to a disposal site 40 miles away would be very high, and the contractor would wait until a full load had accumulated.

The Agency has carefully considered this comment and concluded that no changes to the regulation are needed since it refers to a discussion in the preamble to the proposed amendments. There are no requirements in the NESHAP that asbestos waste be transported to a disposal site daily.

Three commenters said that the amendments improve the clarity and readability of the asbestos NESHAP and two indicated that the required work practices are currently being used by their companies. Two commenters noted typographical errors, which have been corrected in the final rule. Other minor changes were made in the final rule to ensure that the new wording accurately reflects the intent of the original regulation and to further clarify the requirements.

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by EPA in the development of this rulemaking. The principal purposes of the docket are: (1) To allow interested parties to identify readily and locate documents so that they can effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review, except for interagency review materials (§ 307(d)(7)(A)).

Miscellaneous

A review of this regulation has begun. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology and health data, and reporting requirements.

Under E.O. 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it does not meet any of the criteria specified in the Executive Order regarding the annual effect on the economy; increase in cost or prices; or adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S. enterprises to compete with foreign enterprises.

Information collection requirements associated with this rule (40 CFR 61.07, 61.09, 61.10, 61.146, 61.148, and 61.155) have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* and have been assigned OMB control number 2000–0264.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by E.O. 12291.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule, if promulgated, will not have a significant economic impact on any small entities.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: March 30, 1984.

William D. Ruckelshaus,
Administrator.

PART 61—[AMENDED]

40 CFR Part 61 is amended by redesignating Subpart B (§§ 61.20–61.25) as Subpart M and revising the new Subpart M to read as follows:

Subpart M—National Emission Standard for Asbestos

Sec.
61.140 Applicability.
61.141 Definitions.
61.142 Standard for asbestos mills.
61.143 Standard for roadways.
61.144 Standard for manufacturing.
61.145 Standard for demolition and renovation: Applicability.
61.146 Standard for demolition and renovation: Notification requirements.
61.147 Standard for demolition and renovation: Procedures for asbestos emission control.
61.148 Standard for spraying.
61.149 Standard for fabricating.
61.150 Standard for insulating materials.
61.151 Standard for waste disposal for asbestos mills.
61.152 Standard for waste disposal for manufacturing, demolition, renovation, spraying, and fabricating operations.
61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.
61.154 Air-cleaning.
61.155 Reporting..
61.156 Active waste disposal sites.

Authority: Secs. 112 and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412, 7601(a)), and additional authority as noted below.

Subpart M—National Emission Standard for Asbestos

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in §§ 61.142 through 61.153.

§ 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in Subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

Adequately wetted means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

Asbestos means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

Asbestos-containing waste materials means any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes asbestos mill tailings, asbestos waste from control devices, friable asbestos waste material, and bags or containers that previously contained commercial asbestos. However, as applied to demolition and renovation operations, this term includes only friable asbestos waste and asbestos waste from control devices.

Asbestos material means asbestos or any material containing asbestos.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected in a pollution control device.

Commercial asbestos means any asbestos that is extracted from asbestos ore.

Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

Emergency renovation operations means a renovation operation that was not planned but results from a sudden, unexpected event. This term includes operations necessitated by nonroutine failures of equipment.

Fabricating means any processing of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of facilities.

Facility means any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings having no more than four dwelling units).

Facility component means any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility; or any structural member of a facility.

Friable asbestos material means any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

Manufacturing means the combining of commercial asbestos—or, in the case of woven friction products, the combining of textiles containing commercial asbestos—with any other material(s), including commercial asbestos, and the processing of this combination into a product.

Outside air means the air outside buildings and structures.

Particulate asbestos material means finely divided particles of asbestos material.

Planned renovation operations means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

Remove means to take out friable asbestos materials from any facility.

Renovation means altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Roadways means surfaces on which motor vehicles travel. This term includes highways, roads, streets, parking areas, and driveways.

Strip means to take off friable asbestos materials from any part of facility.

Structural member means any load-supporting member of a facility, such as beams and loan supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

Visible emissions means any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

§ 61.142 Standard for asbestos mills.

Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.143 Standard for roadways.

No owner or operator of a roadway may deposit asbestos tailings or asbestos-containing waste material on that roadway, unless it is a temporary roadway on an area of asbestos ore deposits.

§ 61.144 Standard for manufacturing.

(a) *Applicability:* This section applies to the following manufacturing operations using commercial asbestos.

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) *Standard:* Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.145 Standard for demolition and renovation: Applicability.

The requirements of §§ 61.146 and 61.147 apply to each owner or operator of a demolition or renovation operation as follows:

(a) If the amount of friable asbestos materials in a facility being demolished is at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, all the requirements of §§ 61.146 and 61.147 apply, except as provided in paragraph (c) of this section.

(b) If the amount of friable asbestos materials in a facility being demolished is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, only the notification requirements of paragraphs (a), (b), and (c) (1), (2), (3), (4), and (5) of § 61.146 apply.

(c) If the facility is being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements in § 61.146 and in paragraphs (d), (e), (f), and (g) of § 61.147 apply.

(d) If at least 80 linear meters (260 linear feet) of friable asbestos materials on pipes or at least 15 square meters (160 square feet) of friable asbestos materials on other facility components are stripped or removed at a facility being renovated, all the requirements of §§ 61.146 and 61.147 apply.

(1) To determine whether paragraph (d) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the additive amount of friable asbestos materials to be removed or stripped over the maximum period of time a prediction can be made, not to exceed 1 year.

(2) To determine whether paragraph (d) of this section applies to emergency renovation operations, estimate the amount of friable asbestos materials to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(e) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

§ 61.146 Standard for demolition and renovation: Notification requirements.

Each owner or operator to which this section applies shall:

(a) Provide the Administrator with written notice of intention to demolish or renovate.

(b) Postmark or deliver the notice as follows:

(1) At least 10 days before demolition begins if the operation is described in § 61.145(a);

(2) At least 20 days before demolition begins if the operation is described in § 61.145(b);

(3) As early as possible before demolition begins if the operation is described in § 61.145(c);

(4) As early as possible before renovation begins.

(c) Include the following information in the notice:

(1) Name and address of owner or operator.

(2) Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

(3) Estimate of the approximate amount of friable asbestos material present in the facility. For facilities described in § 61.145(b), explain techniques of estimation.

(4) Location of the facility being demolished or renovated.

(5) Scheduled starting and completion dates of demolition or renovation.

(6) Nature of planned demolition or renovation and method(s) to be used.

(7) Procedures to be used to comply with the requirements of this Subpart.

(8) Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

(9) For facilities described in § 61.145(c), the name, title, and authority of the State or local governmental representative who has ordered the demolition.

(Approved by the Office of Management and Budget under control number 2000-0264)

§ 61.147 Standard for demolition and renovation: Procedures for asbestos emission control.

Each owner or operator to whom this section applies shall comply with the following procedures to prevent emissions of particulate asbestos material to the outside air:

(a) Remove friable asbestos materials from a facility being demolished or renovated before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. However, friable asbestos materials need not be removed before demolition if:

(1) They are on a facility component that is encased in concrete or other similar material; and

(2) These materials are adequately wetted whenever exposed during demolition.

(b) When a facility component covered or coated with friable asbestos materials is being taken out of the facility as units or in sections:

(1) Adequately wet any friable asbestos materials exposed during cutting or disjointing operations; and

(2) Carefully lower the units or sections to ground level, not dropping them or throwing them.

(c) Adequately wet friable asbestos materials when they are being stripped from facility components before the members are removed from the facility.

In renovation operations, wetting that would unavoidably damage equipment is not required if the owner or operator:

(1) Asks the Administrator to determine whether wetting to comply with this paragraph would unavoidably damage equipment, and, before beginning to strip, supplies the Administrator with adequate information to make this determination; and

(2) When the Administrator does determine that equipment damage would be unavoidable, uses a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the friable asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(d) After a facility component has been taken out of the facility as units or in sections, either:

(1) Adequately wet friable asbestos materials during stripping; or

(2) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(e) For friable asbestos materials that have been removed or stripped:

(1) Adequately wet the materials to ensure that they remain wet until they are collected for disposal in accordance with § 61.152; and

(2) Carefully lower the materials to the ground or a lower floor, not dropping or throwing them; and

(3) Transport the materials to the ground via dust-tight chutes or containers if they have been removed or stripped more than 50 feet above ground level and were not removed as units or in sections.

(f) When the temperature at the point of wetting is below 0°C (32°F):

(1) Comply with the requirements of paragraphs (d) and (e) of this section. The owner or operator need not comply with the other wetting requirements in this section; and

(2) Remove facility components coated or covered with friable asbestos materials as units or in sections to the maximum extent possible.

(g) For facilities described in § 61.145(c), adequately wet the portion of the facility that contains friable asbestos materials during the wrecking operation.

§ 61.148 Standard for spraying.

The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:

(a) Use materials that contain 1 percent asbestos or less on a dry weight basis for spray-on application on buildings, structures, pipes, and conduits, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos on a dry weight basis on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

(2) Discharge no visible emissions to the outside air from the spray-on application of the asbestos-containing material or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

(d) Owners and operators of sources subject to this section are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(Approved by the Office of Management and Budget under control number 2000–0264)

§ 61.149 Standard for fabricating.

(a) *Applicability.* This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) *Standard.* Each owner or operator of any of the fabricating operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.150 Standard for insulating materials.

After the effective date of this regulation, no owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under § 61.148.

§ 61.151 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of § 61.142 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air from the transfer of asbestos waste from control devices to the tailings conveyor, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.152(b) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, transporting, or deposition of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5°C (15°F). Determine the ambient air temperature by an appropriate measurement method with an accuracy of ±1°C(±2°F), and record it at least hourly while the wetting operation is suspended. Keep the records for at least 2 years in a form suitable for inspection.

(2) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.152 Standard for waste disposal for manufacturing demolition, renovation, spraying, and fabricating operations.

Each owner or operator of any source covered under the provisions of §§ 61.144–61.149 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, transporting, or deposition of any asbestos-containing waste material generated by the source, or use one of the disposal methods specified in paragraphs (b)(1), (2), or (3) of this section, as follows:

(1) Treat asbestos-containing waste material with water:

(i) Mix asbestos waste from control devices with water to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, and wetting operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; and

(iv) Label the containers specified in paragraph (b)(1)(iii) as follows:

CAUTION
Contains Asbestos-
Avoid Opening or
Breaking Container
Breathing Asbestos is hazardous
to Your Health

Alternatively, use warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(g)(2)(ii).

(2) Process asbestos-containing waste material into nonfriable forms:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes; and

(ii) Discharge no visible emissions to the outside air from collection and processing operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under §§ 61.142, 61.144, or 61.149 and received deposits of asbestos-containing waste material generated by the sources, shall

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, apply a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Use the agent as recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent. Obtain prior approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm × 38 cm (20″ × 14″) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

§ 61.154 Air-cleaning.

(a) The owner or operator who elects to use air-cleaning, as permitted by §§ 61.142, 61.144, 61.147(c)(2), 61.147(d)(2), 61.148(b)(2), 61.149(b), 61.152(b)(1)(ii), and 61.152(b)(2) shall:

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Operating the fabric filter collection devices at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric; and

(ii) Ensuring that the airflow permeability, as determined by ASTM Method D737–75, does not exceed 9 m^3/min/m^2 (30 ft^3/min/ft^2) for woven fabrics or 11^3/min/m^2(35 ft^3/min/ft^2) for felted fabrics, except that 12 m^3/min/m^2 (40 ft^3min/ft^2) for woven and 14 m^3/min/m^2 (45 ft^3min/ft^2) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(iii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and

(iv) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(b) There are the following exceptions to paragraph (a)(1):

(1) If the use of fabric creates a fire or explosion hazard, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

(2) The Administrator may authorize the use of filtering equipment other than that described in paragraphs (a)(1) and (b)(1) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

§ 61.155 Reporting.

(a) Within 90 days after the effective date of this subpart, each owner or operator of any existing source to which this subpart applies shall provide the following information to the Administrator, except that any owner or operator who provided this information prior to April 5, 1984 in order to comply with § 61.24 (which this section replaces) is not required to resubmit it.

(1) A description of the emission control equipment used for each process; and

(2) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage; and

(i) If the fabric device uses a woven fabric, the airflow permeability in $m^3/min/m^2$ and; if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2, the minimum thickness in inches, and the airflow permeability in $m^3/min/m^2$.

(3) For sources subject to §§ 61.151 and 61.152:

(i) A brief description of each process that generates asbestos-containing waste material; and

(ii) The average weight of asbestos-containing waste material disposed of, measured in kg/day; and

(iii) The emission control methods used in all stages of water disposal; and

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(4) For sources subject to § 61.153:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. The information described in this section must be reported using the format of Appendix A of this part.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414)).

(Approved by this Office of Management and Budget under control number 2000-0264)

§ 61.156 Active waste disposal sites.

To be an acceptable site for disposal of asbestos-containing waste material under §§ 61.151 and 61.152, an active waste disposal site must meet the requirements of this section.

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements of 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site.	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period is covered with either.

(1) At least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) A resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. This agent must be used as recommended for the particular dust by the manufacturer of the dust suppression agent. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if an alternative control method for emissions that has received prior approval by the Administrator is used.

(Secs. 112 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7412, 7601(a))

[FR Doc. 84-8080 Filed 4-4-84; 8:45 am]

BILLING CODE 6560-50-M

APPENDIX B

ASBESTOS SOURCES

FIELD DATA COLLECTION CHECKLISTS

1. Demolition and Renovation Site Inspections

2. Landfill Site Inspections

DEMOLITION AND RENOVATION
FIELD DATA COLLECTION CHECKLIST

I. BACKGROUND INFORMATION

Site location (Address):
Date and time of inspection:
Weather conditions:
(ambient temperature)
Name of Inspector:

Site owner or operator:

Name:
Address:
Phone:

Prime contractor or subcontractor:

Name:
Address:
Phone:

Site contact:

Name:
Affiliation:
Title:

Notification given: Yes____ No____ If no, why__________________________

II. BUILDING/STRUCTURE INFORMATION

Use (office, retail, industry):
Type of Construction:
Size (number floors, square footage):
Age - Constructed:
Renovated:
Surrounding neighborhood:
Operating schedule:
(if in use)

III. ACTIVITY DESCRIPTION

Demolition: __________, Renovation, _________, Condemned __________

Present status:

If phased renovation
record schedule:

If activity has not begun, obtain work schedule for asbestos removal (return at that time).

IV. LOCATION OF FRIABLE MATERIAL
(Document with photographs)

Record location in building (Blueprints or sketch) -

Is suspect material exposed or concealed?

Is suspect material friable?

Estimate amount: more than 260 ft
more than 160 ft^2

Sample as necessary.

V. REMOVAL PROCEDURES IMPLEMENTED
(Record violations if observed and take samples)

Wetting and stripping -

Unit or section removal -

Use of surfactant -

Water availability -

Local exhaust ventilation/
collection system
(no visible emissions or
air-cleaning) -

Use of barriers -

Other removal technique or procedures -

VI. WASTE HANDLING
(Record violations if observed and take samples)

Wetting waste: Yes____ No____

Record waste
transport throughout
site (including containers)

LANDFILL FIELD DATA COLLECTION CHECKLIST

SITE NAME:

Address:

Date and time:

Weather Conditions:

Investigator:

Site Contact: Name:

Title:

Affiliation:

Phone:

Confidentiality Claim Asserted: Yes________No_________

Permission to take photographs on site: Yes________No________

BACKGROUND INFORMATION:

Operating Schedule:

hr/d______ d/wk______ wk/yr______ d/yr______

Scheduled shutdowns:____

Permitted Site:

Yes_____ No_____, if yes then permit number and effective dates________

____

Permitted by: ____

Requirements to obtain permit(s): ________________________

____

____

____

____

SITE DESCRIPTION:

Years of operation ______________, expected life span ______________

Surrounding land use:* ___________________________________
(*Note North, South, East, and West Orientations)

____

____

____

Type of landfill (area, slope/ramp, trench, pit/quarry) -

Run-on/Run-off control measures -

Wind erosion control measures -

SITE CONTACT INTERVIEW - ASBESTOS WASTE HANDLING:

When was asbestos-containing waste last received?

Type of waste and generator?

How was it deposited (e.g. manually off-loaded, dumped semi-automatically)?

How was it containerized?

Where was it actually deposited? (note on sketch)

Over the previous two months, how many asbestos-containing waste shipments have been received?

Where has the material been deposited?

VISUAL OBSERVATIONS:

Waste sufficiently covered? (depth of cover material)

Type of cover material?

Is a dust suppressant agent used? Type?

Signs or fences present?

Accessible to public (natural barriers)?

Special handling procedures for asbestos?

Any inactive (closed) portions?

Is any asbestos-containing waste exposed?

If the material is exposed---

Was it deposited with the past 24 hours?

Is it sealed in leak-tight containers and are the containers intact?

Are the containers properly labeled?

Are visible emissions present?

SAMPLING (repeat for each sample taken):

Sample identification number(s) -

Sample location(s) -

Visible emissions present?
(*Note: take photographs)

FOR INACTIVE SITES OR PORTIONS THEREOF:

Are visible emissions present?

Are warning signs posted?

Does a fence or natural barrier surround the site? or

Has the asbestos-containing waste been covered by six inches of material and does a vegetative cover exist? or

Has the asbestos-containing waste been covered by two feet of compacted non-asbestos containing material?

SKETCH OF DISPOSAL SITE (PLAN VIEW)

(Include Site Entrance and Boundaries, Roadways, Active Cells, Closed Cells,
Borrow Areas, Direction of Prevailing Wind, Location of Deposited Asbestos-Containing Waste)

APPENDIX C

ASBESTOS

NESHAPs APPLICABILITY DETERMINATIONS

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-1	4/26/73	Are talc milling operations considered asbestos mills?	§61.22(a)	No	The proposed regulation included a definition of asbestos mill, meaning facilities engaged in conversion of asbestos ore into commercial asbestos thereby excludin talc milling which does not convert asbestos ore to commercial asbestos. This definition was inadvertently left out of the final regulation. We are taking steps to have this corrected in the regulations. In the meantime it is our position that asbestos mills do not include talc milling Update - The definition was promulgated in the Federal Register on May 3, 1974, at §61.21(g). An asbestos mill must convert asbestos ore into Commercial asbestos.
*B-2	5/25/73	Is the maintenance of boilers and pipes subject to the asbestos standard for demolition operations?	§61.22(d)	No	Maintenance, including disassembling or replacing of boilers and pipes is not considered demolitio and, therefore, is not subject to 61.22(d). Demolition must include wrecking or removal of structural members.
*B-3	5/25/73	Is the mixing of an asbestos compound that is used to coat a steel pipe for purposes of heat treating covered?	§61.22(c)	Yes	This is the manufacturing of an insulating material 61.22(c)(3).

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
*B-4	5/25/73	Is the spraying of insulation containing asbestos onto cable covered?	§61.22(e)	Yes	It is covered since cable is equipment and there must be no visible emissions to the outside air if the insulation contains greater than 1% asbestos.
*B-5	5/25/73	Is the manufacturing of asbestos paper and felt filters covered?	§61.22(c) (5)	No	The regulation is applicable to the manufacturing of felt and paper only, not felt and paper products.
*B-6	5/25/73	If one purchases felt containing asbestos and cuts it for purposes of making roofing, is this operation covered?	§61.22(c)(5)	No	As explained earlier, this is fabrication.
*B-6.5	5/25/73	Is the manufacturing of asbestos gaskets covered?	§61.22(c)	Yes	It is the manufacturing of a sealant, 61.22(c)(7).
*B-7	5/25/73	If asbestos emissions are visible only because of the presence of another pollutant, is a source out of compliance?	§61.22(a)(c)& (e)		It is out of compliance if the level of asbestos in the emission stream is above that which would be found in the background level of the atmosphere. It is necessary in all cases to take a sampl of the gas stream to determine th presence of asbestos. Since background levels of asbestos are difficult if not impossible to determine, a gas stream sample must be done in order to show compliance.

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
*B-8	5/25/73	Is the cutting of asbestos paper covered?	§61.22(c)(5)	Yes	It is covered if it involves cutting of paper prior to initial marketing.
	7/6/73		§61.22(c)	No	It is not covered if it involves cutting of paper that has been initially marketed. This would be fabrication not manufacturing.
*B-9	5/25/73 revised 7/6/73	If one purchases an asbestos board, which is an insulating or fireproofing product, and then cuts it, is this source subject to the asbestos standard for manufacturing of fireproofing and insulating materials?	§61.22(c)(3)	No	This is considered a fabrication operation. The regulation applies to manufacturing operations (i.e., the mixing of commercial asbestos with other materials and the processing of this mixture into a marketable product which is sold to a distributor or at retail if no distribution is involved). Any processing after initial marketing is considered fabrication. However, there is one exception to the rule. This includes manufacturing of woven friction products which can involve the processing of asbestos textiles purchased from another source.
B-10	5/26/73	Must demolition contractors report at least 20 days in advance of a demolition operation?	§61.22(d)(1)		Revised October 14, 1975, at §61.22(d)(2) requiring written notice 10 days prior to commencement of demolition.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-11	6/12/73	Are concrete and cement manufacturing operations which have naturally occurring asbestos entrained in the ingredients covered?	§61.22(c)	No	The regulations did not intend to cover this situation. The regulations were intended to apply only when commercial asbestos is used in the manufacturing process. The regulation will need to be amended to clarify this situation. In the meantime, it is our position that only manufacturing of cement products which invlove the addition of commercial asbestos is covered by 61.22(c)(2). Update - Revision promulgated on May 3, 1974 at §61.21(h) and (i) defined commercial asbestos as asbestos extracted from asbestos ore. Manufacturing is defined as using commercial asbestos.
B-12	6/13/73	Are manufacturing operations using talc covered?	§61.22(c)	No	Talc is not commercial asbestos and only manufacturing involving commercial asbestos is covered by 61.22(c). Revision promulgated on May 3, 1974 at §61.21(h) & (i) defined commercial asbestos and manufacturing (see B-11 above).
*B-13	6/22/73	If a resin containing commercial asbestos is purchased and further processed, is this operation covered?	§61.22(c)(8)	No	This is a fabrication operation.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
*B-14	6/22/73	Is the spray-on application of asbestos containing materials used for the purpose of decoration or of providing a chemical resistant surface subject to the regulations?	§61.22(e)	No	The regulation applies only to the spraying of asbestos for purposes of insulating and fireproofing. However, the manufacturing of these materials is regulated by 61.22(c)(7), the manufacturing of a coating. All spraying applications containing over 1% asbestos will be covered by upcoming revisions to the regulations.
*B-15	6/22/73	Is the manufacturing of fireproofing and insulating materials covered if vermiculite containing naturally occurring asbestos is an ingredient?	§61.22(c)(3)	No	The regulations were intended only for manufacturing of fireproofing and insulating materials where commercial asbestos is added. Therefore, it is our position that this operation is not covered by the regulation. An amendment to the regulation will be needed to clarify this. Update - Revised on May 3, 1974 at §61.21(h) and (i) (See B-11 above)
B-15.5	8/8/73	Do demolition and renovation regulations apply to ships in dry dock?		Yes	See B-17. Since that determination the definition of "demolition" and "structural member" have been clarified by revisions on October 14, 1975, and March 2, 1977.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
*B-16	8/8/73	Is the spraying of asbestos containing materials used for insulating or fireproofing buildings, structures, pipes and conduits, if the pollutant would not be expelled to the outside atmosphere, covered under NESHAPS?	§61.22(e)	Yes	Although asbestos is not directly emitted to the air from these operations, there is a potential emission with future demolition. It was decided to cover these operations to reduce this potential.
B-17	8/8/73	Are drydock operations involving ship refurbishment subject to the asbestos regulations?	§61.22(d)		These operations are subject if they involve the wrecking of load supporting structural members. Operations involving only refurbishment of boiler and pipes are not subject. Update - Revised October 14, 1975 at §61.21(j), defining demolition as wrecking or taking out of any load supporting structural member or related stripping or removing of asbestos materials. Revised March 2, 1977 - all structural members are subject to the regulations.
*B-18	8/8/73	A manufacturer has two plants. Plant A produces asbestos paper which is shipped to Plant B. Plant B makes roofing tile from the asbestos paper and treats it with an asphalt mix. Is Plant B covered by the standard?	§61.22	No	Standard covers the manufacturing of asbestos paper but does not cover fabrication of asbestos paper products.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
*B-19	10/23/73	Are the emissions of asbestos from the manufacturing of asphalt coating (not asphalt paving but coatings for asphalt paving) applicable to the regulation?	§61.22(c)(7)	Yes	It is the manufacturing of a coating 61.22(c)(7).
*B-20	10/23/73	Does NESHAPS apply to the salvaging of pipes with asbestos covering?	§61.22(d)	Yes	Procedures detailed in §61.22(d)(2) must be followed, i.e., pipes must be wetted and removed prior to demolition of load-supporting structural members. However, wetting is only required where the asbestos insulation must be stripped to remove the pipes (e.g. pipe joints.) If insulation on the pipe remains undisturbed it will not create an emission problem.
B-21	3/26/74	If emissions containing asbestos are visible only because of the presence of steam, is a source out of compliance?	§61.22(a) (c) & (e)	No	It was never intended in the development of the standard that steam would be included in the determination of visible emissions. We are taking steps to amend the regulations to make this clear. Update - So revised on May 3, 1974 at §61.22(g). The presence of uncombined water shall not be a violation of emission requirements.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-22	4/2/74	When commercial asbestos is added to previously mixed concrete at the construction site, is this considered manufacturing of cement products under NESHAPS?	§61.22(c)(2)	Yes	See definition of Manufacturing §61.21(i).
B-23	7/1/74	Can asbestos tailings be used on roadways where: (a) such material is used in bituminous mixes & covered with asphalt & sand, (b) such material is used in liquid seals & covered with asphalt & sand or (c) such material is used in bases and covered with sand & gravels?	§61.22(b)	No	Surfacing of roadways with asbestos tailings is prohibited under all circumstances except for temporary roads located on an area of asbestos ore deposits.
B-24	7/11/74	Does the manufacturing standard apply only to sources using commercial asbestos & not to those receiving asbestos as lap, roving yarn, mat, or some such form?	§61.22(c)	Yes except	In the case of woven friction products, where the operation begins with textiles containing commercial asbestos. Regulations for some fabrication operations will be proposed soon. Update - Revisions were promulgated 10/14/75, at §61.22(h), covering the following fabrication operations: cement building products, certain friction products, and cement or silicate board.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-25	10/1/74	Can asbestos tailings be used for purpose of snow & ice control on driveways & parking lots?	§61.22(b)	No	Driveways and parking lots are considered roadways under 61.22(b). Update - Regulations were revised October 14, 1975 to reflect this determination at §61.21(v).
B-26	1/24/75	Are visible emissions from asbestos block curing ovens subject to NESHAP regulations?	§61.22(c)	No	Visible emissions from these sources are caused by resins (hydrocarbons) and not by asbestos.
*B-27	4/7/75	Are asbestos mine tailings allowed for use in base materials for roadways?	§61.22(b)	No	Use of asbestos mine tailings in bituminous mixes, liquid seals or bases covered with sand or gravel is prohibited in the regulations.
*B-28	4/7/75	Are asbestos tailings allowed for use in concrete roadways?	§61.22(b)	No	Use of asbestos tailings are not allowed in concrete roadway construction.
*B-29	4/7/75	Are asbestos tailings allowed for use as backfill?		Yes	Use of asbestos tailings as a backfill is not covered by the regulations.
*B-30	6/13/75	Are asbestos mill tailings allowed for use in roadbed construction?	§61.22(b)	No	Use of asbestos mill tailings in roadway construction is prohibited.
*B-31	6/26/75	Is an asbestos textile plant subject to the NESHAP regulations?	§61.22(c)(1)	Yes	Construction of 12 textile winders approved, subject to 40 CFR 61.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-32	10/19/75	Is the demolition of an industrial building which contains no friable asbestos material except a chemical reactor vessel which is insulated with friable asbestos material covered by NESHAPS?	§61.22(d)	Yes	Revised October 14, 1975, at §61.22(d), to apply to pipes, ducts, boilers, tanks, reactors turbines, furnaces, or structural members.
*B-33	11/10/75	Is the manufacturing of asphalt paving to which commercial asbestos is added covered?	§61.22(c)		It is the Administrator's judgment that the manufacture of asphalt concrete is a major source of asbestos emissions, therefore regulations limiting emissions from the manufacture of asphalt concrete were promulgated in the Federal Register on 10/14/75, at §61.22(c)(11).
*B-34	5/6/76	Are asbestos mine tailings used in asphalt mix subject to the NESHAP regulations?	§61.22(b)	Yes	Use of asbestos tailings in an asphalt mix to be "installed over the undercoat" of an asphalt surfaced road is considered a roadway application which is prohibited by the regulations.
*B-35	4/25/77	What is an acceptable method for identifying asbestos samples found in demolition/ renovation inspections?		microscopy	EPA has relied on polarized microscopy in most enforcement cases. This method is used for identification of hard samples of asbestos as are found at demolition and renovation sites, as well as waste disposal sites.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-36	5/9/77	Do demolition and renovation regulations apply to ships tied up at a dock?	§61.22(d)	Yes	If the ship is undergoing any operation involving wreckage or removal of structural members which contain asbestos material, the operation must be in compliance with the regulations.
B-37	5/9/77	Is the ship owner or dock owner responsible for compliance with demolition/renovation regulations?	§61.22(d)		The owner of the dock is responsible for compliance with the NESHAP regulations if he is also the owner/operator of the demolition or renovation operation. the ship owner is always responsible for compliance in each situation.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B -38	10/7/77	Can the fencing requirement in §61.25(c) be satisfied by placing a fence along the property line of a plant containing an asbestos disposal site rather than around the perimeter of the disposal site itself?	§61.25(c)	Yes	This question was resolved in 40 Fed. Reg. 48294, October 14, 1975 as a response to a comment on the amendments proposed October 25, 1974. A fence surrounding a plant property which adequately deters public access may substitute for a fence around the perimeter of a disposal site located within the property fence.
B -39	11/3/77	Does the 1% limit on asbestos content of spray on materials apply to naturally-occurring as well as commercially added asbestos?	§61.22(e)	Yes	The 1% limit on spraying of asbestos-containing materials in §61.22(e) does not specify commercial asbestos. Therefore the limitation is applicable to naturally-occurring as well as commercial asbestos.
B -40	2/9/78	Is a wallboard manufacturing facility which uses as filler material, tailing fines from an asbestos mine, subject to §61.22(c)? Is it subject to any other section of the asbestos regulations?	§61.22(c)	No	Section 61.22(c) applies to manufacturing operations who use commercial asbestos. Since tailing fines do not fall into the category "commercial asbestos" as defined in §61.21(h), the operation is not subject to §61.22(c). Since the source of the tailing fines is a mine, the use of the tailings in the wallboard manufacturing process is not covered by any section under Subpart B. However, were the source of the tailing fines an asbestos mill, any operations involving the collection, processing, packaging, transporting, or deposition of the tailing fines would be subject to the requirements [illegible]

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Question	Affected Regs	Determ.	Discussion
B-41 6/29/79	In reference to the asbestos regulations, are subject inactive waste disposal sites prevented or restricted from future use as commercial or residential sites?	61.22(t)	Conditional	Inactive disposal sites may be used for commercial or residential development provided that exposure of the asbestos is avoided in accordance with §61.22(e).
B-42 9/10/79	May the sub-base layers of roadways be paved with asphalt that contains asbestos tailings?	61.22(b) 61.25	Conditional	The prohibition in 61.22 does not apply to the paving of roads with asbestos tailings that are well encapsulated in bituminous material so that the release of asbestos fibers will not occur. EPA approval is necessary in order to dispose of asbestos tailings at an asphalt plant. The emission control proposed by the asphalt plant would have to be equal to or exceed the level of control required by section 61.25.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

CODE	Date of Response	QUESTION	AFFECTED REGULATION	DETER-MINATION	DISCUSSION
B-43	3/4/81	Is the "manufacture" of shot gun shells subject to the asbestos regulations, if no commercial asbestos is used at the facility?	§61.22(c)	No	Although manufacturing of shot gun shells is specifically listed under the emission standard in §61.22(c), the Remington facility is not subject to the regulations because no commercial asbestos is used at the facility. This facility assembles the shells using a wad of asbestos but the wads are produced from commercial asbestos at another Remington facility.
B-44	3/31/81	Is a waste disposal site subject to the asbestos standard when the disposal site is not owned or operated by the generator of the asbestos waste?	§61.22(j) §61.22(k) §61.25	No	Only disposal sites operated by the generators of asbestos waste are subject to the regulations. Otherwise, generators are responsible for disposing of their waste at an acceptable disposal site as defined in §61.25. The waste disposal requirements do not apply directly to the waste disposal sites; the exception is the case where the owner or operator of an inactive disposal site previously operated by a generator is subject to to the regulations.
B-45	4/15/81	Is the Seagull modified electrostatic precipitator an acceptable alternative for the asbestos filtering equipment described in §61.23(a) and authorized in §61.23(c).	§61.23(a) §61.23(c)	No	Seagull's portable precipitator has 97 percent fractional efficiency for total particulate with an aerodynamic diameter of approximately 1.0 micrometer. This efficiency is less than the 99.99 percent particulate mass collection efficiency demonstrated at baghouse applications. Therefore, it may be expected that the asbestos collection efficiency is less than equivalent to the baghouse described in §61.23(a).

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

CODE	Date of Response	QUESTION	AFFECTED REGULATION	DETER-MINATION	DISCUSSION
B-46	3/18/82	1. Is a manufacturing source's recycled asbestos waste subject to the waste handling regulations or the manufacturing regulations?	§61.22(c)		If a manufacturing source recycles its asbestos waste by conveying it from a baghouse to a mixing area for re-use, the recycling operation is considered one of the processing operations referred to in the definition of manufacturing. Therefore the operation is subject to §61.22(c). Waste handling procedures in §61.22(j) are inappropriate for this operation.
		2. Is rail car unloading of asbestos at a subject source covered by the regulations?	§61.22(c)	Yes	Based upon definitions in §61.21 and the description in §61.22(c), all operations at the manufacturing site are subject to the regulations. The operation of unloading bags of commercial asbestos received by rail to be used in the manufacturing process are subject to §61.22(c).
		3. Does the wetting of asbestos waste materials from a demolition or renovation automatically make the source subject to §61.22(j)(3)(i)?	§61.22(d)(4) §61.22(j)(3)(i)		Since the source in question is voluntarily complying with the work practice of wetting friable asbestos materials (§61.22(d)(4)), they should be encouraged to complete the process by disposing of the waste as outlined in §61.22(j)(3)(i).
B-47	4/1/82	Is an operation to remove friable asbestos roofing material from an industrial complex subject to the regulations for demolition and renovation?	§61.22(d)	Yes	For the renovation operation to remove roofing material to be subject to §61.22(d), the roofing must be considered a "structural member". Based upon the definition of "structural member" in §61.21 as amended on March 2, 1977, the intent is to cover any non-load-supporting member, such as a roof. Therefore the removal of roofing material should be subject to the requirements for renovation given in §61.22(d).

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Date of Response	Question	Affected Regulation	Determination	Discussion
B-48	7/27/82	Does the asbestos standard apply to the spraying of an automotive undercoating that contains 6% to 10% asbestos fiber based on a bituminous carrier.	§61.22(e)	No	According to 40 CFR §61.22(e)(3), the spraying of material containing asbestos encapsulated in a bituminous or resinous binder is exempted from the requirements of the standard. Furthermore, the spraying of automotive undercoating is specifically exempted in the preamble discussion of the June 19, 1978 asbestos revisions. (See 43 Federal Register 26372, June 19, 1978.)
B-49	8/27/82	a) Do the requirements for waste disposal sites apply to an asbestos settling pond that has a useful life of twenty years?	§61.25	Yes	The settling pond is considered an active waste disposal site and must meet the requirements of §61.25. That section prohibits visible emissions from the disposal site and requires that warning signs and fencing be installed.
		b) Do they apply to a settling pond that is used for temporary storage of asbestos waste before it is transferred to a landfill?		No	In this case the landfill is considered the waste disposal site and is required to comply with §61.25. The settling pond is subject to the requirements of 40 CFR §61.22(j) which govern interim steps in the collection of asbestos - containing wastes prior to deposition at an acceptable waste disposal site.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

Code	Reference	Question	Affected Regulation	Determination	Discussion
B-50	Memo (Reich to Kee), 10/26/82	A company uses commercial asbestos to manufacture caulks and roofing sealants. The company wants to lower costs by disposing of the bags, which previously contained this commercial asbestos, at an ordinary waste landfill. If these empty bags are melted down into nonfriable plastic rocks, must they be deposited at waste disposal sites operated in accordance with 40 CFR 61.25?	§61.21(w); §61.22(j); §61.25	Yes	The waste disposal standard for manufacturing operations, 40 CFR 61.22(j)(2), requires that all asbestos-containing waste material be deposited at waste disposal sites operated in accordance with the provisions of §61.25. "Asbestos-containing waste material" is defined at §61.21(w) as "any waste which contains commercial asbestos and is generated by a source subject to the provisions of this Subpart, including.....bags or containers that previously contained commercial asbestos." Since the bags to be melted did previously contain commercial asbestos, the bags clearly are asbestos-containing waste material, and must be deposited at waste disposal sites operated pursuant to the provisions of §61.25. Additionally, the provision at §61.22(j)(3)(ii) that asbestos waste may be processed into nonfriable forms is clearly an alternative disposal method to the no visible emissions provision and not an alternative to the requirement to deposit waste at sites operated in accordance with §61.25. See §61.22 (j)(3)(ii)(A) which states that for asbestos - containing waste material processed into nonfriable forms, "all asbestos-containing waste material shall be formed into nonfriable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of §61.25."

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

CODE	REFERENCE	QUESTION	AFFECTED REGULATION	DETERMINATION	DISCUSSION
A-51	Memo (Reich to Davis), 10/26/82.	Worn asbestos pads are replaced with new ones. The worn pads are stripped and the new ones riveted into place. Attaching the new pads involves no grinding, cutting, or other altering; they are precut and consist of 20% encased asbestos. Since stripping the old pads results in asbestos emissions, is this operation considered fabrication subject to §61.22(h)?	§61.21(s) §61.22(h)	Yes	Fabricating is defined at §61.21(s) as "any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations." The stripping or debonding of the old pads and the bonding of new ones is considered the processing of a manufactured product containing commercial asbestos. The Control Techniques Document for Asbestos Air Pollutants (AP-117, February 1973, pp. 3-29 to 3-36), a part of the asbestos standard public record, makes clear that debonding or stripping is considered part of friction product processing, and as such, its emissions are covered under §61.22(h). Although the bonding of asbestos friction material on motor vehicles is exempted at §61.22(h)(2) from the fabrication provisions, no exemption is allowed for the debonding or stripping of such materials.

NESHAPS APPLICABILITY DETERMINATIONS--ASBESTOS
(continued)

CODE	REFERENCE	QUESTION	AFFECTED REGULATION	DETERMINATION	DISCUSSION
B-52	Memo (Reich to Kee), 10/27/82.	a) Adhesives are manufactured using a raw material known as Hedmanite, which is a short-fiber form of asbestos mined from a naturally-occuring formation. Is this operation subject to the asbestos regulations, 40 CFR 61, Subpart B?	§61.21(h),(i); §61.22(c)	Yes	Hedmanite meets the definition of commercial asbestos at §61.21(h) as "any variety of asbestos produced by extracting asbestos from asbestos ore." Manufacturing of asbestos is defined at §61.21(i) as the combining of commercial asbestos with any other materials and the processing of this combination into specified products. Section 61.22 (c)(7) specifies one such product as adhesives. Since Hedmanite is commercial asbestos combined with other materials and processed into adhesives, it is subject to the asbestos regulations of 40 CFR 61, Subpart B.
		b) Two sources receive dry resin mixtures containing commercial asbestos. The mixtures are placed in heated presses to form the cores for grinding wheels and abrasive discs. Are the sources subject to the asbestos standard?	§61.22(c),(h)	No	Grinding wheels and abrasive discs are not considered friction products, as that term is intended. EPA's "Background Information on NESHAPs-Proposed Amendments to Standards for Asbestos and Mercury," October 1974, indicates that the term "friction products" refers to those products designed to create friction in order to stop movement-brake linings and clutch plates. Products such as abrasive discs and grinding wheels do not fall under this category. These sources are not subject to the manufacturing or fabricating provisions because the products they process do not fit into any of the manufacturing or fabrication categories listed at §61.22(c) and (h).
B-53	Memo (Copeland to Thomson) 4/13/83	Are asbestos emissions from gold mining covered by the asbestos NESHAP?	40 CFR 61, Subpart B	No	The asbestos NESHAP does not apply to any mining operation but does cover milling of asbestos ore to produce commercial asbestos. Since the gold mining operation does not involve commercial asbestos production, any mining operation would not be covered by the NESHAP.